REVIEW

OF THE

FOREST ADMINISTRATION

IN THE

SEVERAL PROVINCES UNDER THE GOVERNMENT OF INDIA

FOR THE YEAR

1880-81.

BY

W. SCHLICH, PH. D.,

OFFG. INSPECTOR GENERAL OF FORESTS TO THE GOVERNMENT OF INDIA.

Dated the 1st July 1882.

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INTRODUCTION.

THE present Review deals with the several provinces under the Government of India, including Berar, Biluchistan, and, in the financial chapter, Madras and Bombay. Mysore has now been made over to the Maharajah of that country, and, as no Report on Forest Administration in that State during the year 1880-81 has been received, it has been excluded from the several statements contained in the Review.

2. **Localisation of the Superior Staff.**—By a Resolution of the Government of India, dated the 1st April 1881, the Superior Forest Staff has been localised, after having been arranged in six lists, in the following manner:—

Name of List.	Conservators.	Deputy Conservators.	Assistant Conservators.	Total.
1. Bengal and Assam	2	5	8	15
2. North-Western Provinces and Oudh ...	3	6	9	18
3. Punjab	1	7	10	18
4. Central Provinces	1	6	6	13
5. British Burma	2	8	7	17
6. Residuary list (including School appointments)	1	5	6	12
Total ...	10	37	46	93

First appointment to the grade of Assistant Conservator rests with the Government of India: promotion from Assistant Conservator, 3rd grade, to Deputy Conservator, 1st grade, with the Local Government; while the appointments to the rank of Conservator of Forests are reserved to the Government of India. It will be seen that the Local Governments are quite

independent, except that the Government of India confirms first appointments to the Department and selects the head of the Department in each Province or Circle.

3. **Forest Officers connected with Civil Officers.**—The system of connecting Forest Officers closely with the Civil Administration was suggested by Mr. Brandis, the Inspector General of Forests to the Government of India, when submitting proposals for a re-organisation of the Bombay Forest Staff in 1870. The plan then adopted consists of the appointment of a "District Forest Officer" to each district or collectorate, who is in charge of all forest matters in the district, and entirely subordinate to the Collector, through whom he corresponds with the Conservator.

The next step in this direction was taken by the Chief Commissioner of the Central Provinces, who introduced, in 1877, a modified system, according to which the Conservator and his Assistants remain in independent charge of all Reserved Forests, while the District Forest Officers are subordinate to the Deputy Commissioners regarding all Unreserved Forests.

A further modification was introduced by the Government of the North-Western Provinces and Oudh in 1880, by which the District Forest Officer is made subordinate to the Collector, his correspondence being arranged in two classes; that referring to accounts, establishments and a few other subjects is sent direct to the Conservator of Forests, while that on all other subjects is submitted by the District Forest Officer to the Collector, who forwards it to the Conservator.

The same system was introduced into Assam on the 1st January 1882.

In Chittagong several changes took place. Originally the Forest Officer acted directly under the Conservator of Forests, Bengal; then he was made subordinate to the Deputy Commissioner of the Chittagong Hill Tracts, the Commissioner of the Division being at the same time gazetted as Conservator of Forests. Subsequently the original system was re-established, and finally the Forest Officer was again made subordinate to the Deputy Commissioner of the Hill Tracts, the Conservator of Forests, Bengal, remaining Conservator for the Hill Tracts.

In the Hazára and Rawalpindi Districts of the Punjab the Forest Officers have, for many years past, been nominally subordinate to the Civil District Officers.

In Madras a system similar to that adopted in Bombay has been in force for some time, and the matter has been discussed in almost every other Province.

4. Experience has shown the great advantages of the principle, and the time has now arrived when the system of connecting the Forest staff directly with the Civil staff should be generally adopted throughout India. Of the different modifications, that followed in Bombay seems to have worked best, and it is, with certain alterations, about to be introduced into the Madras Presidency. The system, as now perfected, has been described in detail in a Memorandum drawn up by Mr. Brandis, three Collectors, and the Conservator of Forests in Madras, and it may be indicated as follows:—

The District Forest Officer and the staff under him hold charge of all forests, whether reserved or otherwise, in the district, and they are directly subordinate to the Collector. The District Forest Officer receives no orders from any other authority, and he will be in the position of Assistant to the Collector in forest matters, while the Collector will give no orders on such matters, except through him. On matters of ordinary routine the Collector will authorise the District Forest Officer to issue orders without reference to him, making such arrangements as may be necessary for such orders being reported by means of weekly abstracts. Other matters will be referred to the Collector by means of office notes. The District Forest Officer, being the head of a branch of the Collector's office, will not communicate with the Collector by official letters. He will draw up in his own hand a sufficiently full report or diary of all business, and send it to the Collector at the close of each week. The Collector, after recording any remarks or instructions he may think fit, will send it on for the Conservator's information, and that officer will return it

without delay, noting any remarks or suggestions he may have to offer. It will then go back to the District Forest Officer, the Collector, if he disagrees with the Conservator's remarks or suggestions, informing the District Forest Officer, so as to guard against action being taken of which he disapproves. In such cases he will at once inform the Conservator. It will thus be seen that the Collector will have full executive power, while the functions of the Conservator in regard to the current work are mainly those of advice. On the other hand, the control of the departmental finance and organisation will rest with the Conservator.

5. As to finance, there will be an annual budget, which will be sanctioned by Government. This will be made up of district budgets; and in close connection with and, in fact, depending on these budgets, will be the annual plans of operations in each district, which will be framed by the District Forest Officer, and discussed, and probably agreed upon, by the Collector and the Conservator. If they differ as to the budgets and plans of operations, each will have his say, and it will be for Government to decide. This done, the responsibility for the execution will rest with the Collector alone. The existing powers of financial control vested in the Conservator, namely, of making transfers from district to district under "A—Working Charges" and "B—Establishments," and of sanctioning estimates for works, should remain with him; but he should not have power to transfer any allotment from a district without the Collector's assent, or the orders of Government. If during the year the Collector desires to incur expenditure which is not provided in the budget, he will have to address the Conservator, who, if he approves and can find the money, will make it available. The Conservator will be kept informed of what is going on in all districts, and will be able to watch progress; but the responsibility for the due execution of the programme, and for the conduct of all district business, will rest with the Collector, and not with the Conservator. The Collector, however, should not be at liberty to make transfers under "Working Charges" in his district without the Conservator's sanction.

6. As to the staff, the scale of establishments will be sanctioned by the Government, and the appointment, posting, and promotion of the superior officers rest with them. The appointment, posting, and promotion of Forest Rangers and Foresters should vest in the Conservator, and the appointment, posting, and promotion of Forest Guards in the Collector, who will no doubt, in practice, leave these matters to his District Forest Officer. The Collector should have the power to fine and suspend Forest subordinates, and to dismiss Forest Guards. The dismissal of Rangers and Foresters will rest with the Conservator, who appoints them, but he will naturally be guided in his action by the Collectors, who are responsible for the local working and protection of the forests. It is of supreme importance that all Forest Officers, those of the subordinate as well as of the superior staff, shall possess the requisite qualifications and training, and these would not in all cases be secured, nor could the flow of promotion necessary to efficiency in the department be maintained, under a system of local selection by Collectors. In regard to Forest Rangers and Foresters, therefore, Collectors must accept the Conservator's decisions, though no doubt that officer will, as far as he can, consult the convenience and wishes of the Collectors in the disposal of the staff.

7. Professional matters will eventually be mainly regulated by working plans prepared for each forest. Whenever circumstances are sufficiently advanced to justify the preparation of such working plans for any forest, the data will generally be collected, and the proposals framed, by a specially qualified Forest Officer, working in conjunction with the District Forest Officer and under the control of the Conservator. When completed, such working plans should be concurred in by the Collector, and if intended to regulate operations during a long series of years, they should be submitted to higher authority for sanction. No deviation from the provisions laid down in such working plans should be permitted without the Conservator's concurrence, and none should be made unless necessitated by unforeseen events.

8. But it will be a long time before the preparation of working plans for all forests can be undertaken on a large scale, and the present organisation must, therefore, be framed for the existing state of things. As already explained,

the work in each district will be regulated by annual plans of operations prepared in close connection with the budgets. Whenever working plans have been framed, these annual plans of operations must be based upon the provisions of the working plans. Where no working plans exist, and until such plans have been made, the annual plan of operations must be based on the general principles of forest conservancy. These annual plans will prescribe what work is to be done in the demarcation of boundaries, road-making and other communications, fire-protection, closing forests against grazing, cultural operations, and thinning and cutting; and they will generally indicate all work that should be done during the year in each forest range of the district. The District Forest Officer will, under the Conservator's advice, frame the plan of operations, which, as already explained, must receive the Collector's approval. The responsibility for carrying out the plan of operations will rest entirely with the Collector, but for such deviations as may be necessitated by unforeseen events the Conservator's consent must first be obtained.

9. In this manner the Conservator will exercise the needful control in professional matters, and maintain that continuity of action which is necessary. But in the present state of forest administration, it must not be expected that the annual plans of operations will be sufficient. There will be many instances in which the Conservator will find it necessary to communicate with the Collector regarding matters of a professional nature, which are not provided for in the annual plans. Hence, it is indispensable that the Conservator should be kept fully informed of all that is going on, and this will enable him at any time to communicate his opinion to the Collector; and, if the matter seems of sufficient importance, to address Government. Eventually each Collector will have at hand a professional officer of high qualifications: this will tend to diminish references by and to the Conservator, and there will then be little danger of action in a wrong direction being taken, or of the Conservator being unable to make his professional influence felt.

10. The introduction of the system here sketched must be of the utmost importance for the progress of forest conservancy in India. The Forest Department having thus become an integral part of the general administration, all jealousy about lands and revenue disappears, and, the Collector being directly interested in the administration of the forest lands, a thorough safeguard is established that the Forest Law is applied in a judicious manner, and that the requirements of the people of the district are duly considered.

11. **Organisation.**—Closely connected with the subject noted above is the organisation of the Department and of the staff. The difficulty at present in the way of a systematic organisation is the unequal distribution of the forest area. Some districts are rich and others poor in forest. For the former a separate District Forest Officer should always be appointed, and he should be put under the orders of the Collector or Deputy Commissioner, as the case may be, but it is not always easy to arrange for districts with a limited forest area. In some cases several districts may be joined into one Forest Division, the Forest Officer being either put directly under the orders of the Commissioner of the Division, or under the orders of the Collectors as regards the forests in their respective districts. The latter arrangement is of course awkward, as it necessitates the placing of the Forest Officer under several masters, and it should be avoided, whenever this can be done. In such cases it will, as a rule, be better to put the Forest Officer directly under the Commissioner's orders.

12. An important point is the formation of suitable "Ranges" or executive charges. When this has been done, we shall have the following organisation:—

(1) **Circle.**—Comprising a province or part of it, presided over by the Conservator of Forests;

(2) **Division.**—Ordinarily comprising a district, presided over by the District Forest Officer, who should be a Deputy Conservator of Forests; and

(3) **Range.**—Comprising part of a district, presided over by a Ranger, Sub-Assistant Conservator, or Assistant Conservator, according to circumstances.

The superior staff will, in future, be chiefly recruited by trained men sent out from home, who enter as Assistant Conservators of the 3rd grade, and who will take charge of Ranges, until they have qualified for the charge of a Division, and until suitable vacancies arise. The Rangers and Sub-Assistants are men appointed in this country, and they will all be Natives of India. The men selected for this branch of the service will ordinarily enter as Foresters, and after they have done one year's satisfactory service, they will be sent to the Dehra Dún Forest School. Here they remain for not less than 16 months, and, if necessary, for 28 months. On obtaining the Ranger's certificate they return to their Province to be appointed as Rangers as vacancies occur.

Rangers who distinguish themselves specially may subsequently be advanced to the rank of Sub-Assistant Conservator, and even to Assistant Conservator in exceptional cases. It is evident, without further explanation, that the success of Forest Administration in the future depends greatly on the formation of a competent staff of Rangers, or executive officers.

13. **Dehra Dun Forest School.**—For the purpose of training an efficient staff of executive officers, the Forest School at Dehra Dún has been established. It has repeatedly been referred to in previous Reviews, and it will suffice to mention that, though started in 1878, it has been permitted to grow slowly, the instruction for the first two years having been practical only. In the summer of 1881, however, the first course of theoretical instruction was held. About 30 students, arranged in two classes, attended the lectures on Forestry, Botany, Forest Law, Natural Sciences, Mathematics and Surveying. The result has been satisfactory, though much remains to be done. The school buildings have now been arranged in a suitable manner, the collections are steadily being extended, a forest garden and experimental blocks have been taken in hand, and the preparation of short hand-books to assist the students in their work is fairly advanced; but, of course the completion of all this work takes time, and it must not be expected that matters can be placed on a thoroughly satisfactory footing all at once.

The Working-Plan Branch has been connected with the Forest School, and thus the means of teaching in that branch have been augmented.

14. As the result of the experience gained during the first course of theoretical instruction, it has been decided to raise the educational requirements of the students, and to admit only men who have passed the entrance examination of an Indian University on the English side, it having been found that the students require that minimum of education to enable them to follow the lectures.

The second course of theoretical instruction commences on the 1st July 1882, and it is expected to extend over a term of 4 months. The Foresters join the School on the 1st July, and they will thus attend two terms of theoretical instruction of 4 months each, and one term of practical instruction during the intervening 8 months. Those who do not earn the Forest Ranger's certificate at the end of the 16 months may be retained at the School for an additional term of 12 months, or remanded to their province as unfit for the executive branch of the service.

15. **Fodder and Fuel Reserves.**—The establishment of combined fodder and fuel reserves was referred to in last year's Review, and a good stride in advance has been made during the last twelve months.

In addition to the Ajmere and Merwara Reserves mentioned in last year's Review, a fodder and fuel reserve has been established near Amraoti. In the North-Western Provinces a scheme is under discussion for taking up 100 square miles of usar (saline) land, with the view of transforming the several blocks into grass and fuel reserves. Experiments in this direction were commenced some two years ago by the Agricultural Department of the Province, but it is now proposed that the Forest Department shall take over the work.

The Government of Madras, it is believed, has this subject now under consideration, and salutary measures are likely to be adopted shortly.

The Punjab possesses some 15,000 square miles of so-called rákh lands scattered over the various districts. Only a small portion of this area has as yet been definitely set aside for the supply of fodder and fuel, but it is hoped that this work will be rapidly advanced now, by deciding what areas are to be maintained permanently for fodder and fuel, and what parts shall be thrown open for the extension of cultivation. The system of District Forest Officers will in the Punjab, more than anywhere else, facilitate the solution of the questions involved, and the sooner it is introduced into that Province the better.

16. Generally speaking, the establishment of fodder and fuel reserves is of the utmost importance in the dry districts of North-Western, Central, and Southern India, and the subject cannot be pressed too strongly upon the attention of Local Governments, whose duty it is to prevent or reduce the mortality of cattle during years of famine, apart from the fact that the increase in the supply of fuel must ultimately restore manure to its legitimate use, instead of its being burned, as at present, over large stretches of country.

17. **Government Agency *vs.* Private Enterprise.**—Connected with the organisation of the future is the question whether the forests shall be worked by Government agency, or by private enterprise. When forest conservancy was first commenced, working by Government agency had to be resorted to, because it was essential to change the wasteful system in force for one based on economic principles; but now that conservancy has succeeded in getting the greater portion of the forest areas fairly in hand, the question has been raised whether the working could not gradually be made over again to private parties. The experience gained in Burma is certainly not encouraging, but there, it appears, adverse agencies were at work, which can easily be rendered harmless in the future. In the Central Circle of the North-Western Provinces, a system of cutting sleepers by private agency has been introduced, which, it is believed, has worked satisfactorily. A contractor undertook to cut about a lakh of sleepers out of certain timber set aside for the purpose, under the simple arrangement that Government shall receive one rupee royalty per sleeper when they are sold, while the whole of the financial risk remains with the contractor.

18. The important point is, that in all high timber forests the marking of the trees must rest with the officers of the Forest Department. If, in addition to this, conditions destined to secure an economical working can be enforced, then the extraction of the material may safely be handed over to private parties. Of course, it cannot be expected that the direct return to Government will be quite as high as under the system of Government agency (and in connection with this subject attention is invited to Chapter IV of this Review), because contractors expect to realise a certain amount of profit; but the difference need not be great, and the indirect advantages are considerable. If relieved of departmental timber and fuel works, the Forest staff will be able to devote a much larger portion of its time to protective and reproductive measures, by which the yield of the forests will ultimately be greatly enhanced. It is not intended to change all at once the system now in force, and in certain cases it may be necessary to retain the work in the hands of Government for years to come; but the subject should be kept in view, and where the working can be made over to private enterprise without serious loss to Government, the matter should be taken into consideration.

19. **Central Office of Forest Accounts.**—The organisation of a Central Office of Forest Accounts has been so great a benefit to the Department, that the matter deserves being mentioned here. The following account is taken from a Note by Mr. Brandis:—

Until 1860 the accounts of the Forest Department in the different Provinces were audited by the local Accountants General. At that time one of the numerous obstacles to progress in Burma was the difficulty of getting the monthly Forest accounts audited. Almost every charge connected with timber operations or other forest work was objected to or formed the subject of lengthy correspondence. The office establishment of the Superintendent of Forests had to be increased and a separate Deputy Superintendent had to be

appointed, chiefly to look after the accounts, and to carry on the correspondence with the Accountant General in Calcutta.

The inconvenience was so great that a remedy became necessary, and this was found in the transfer of the accounts from the Accountant General, Calcutta, to the Controller, Public Works Accounts, at Rangoon. A simple and practical system of accounts was then elaborated, and the forms adopted at that time have been the basis of the present system of Forest accounts. The control and audit was exercised in a manner suitable to the requirements of the Department, and from that time all difficulty in respect of the accounts of the Burma Forests ceased.

A similar system was soon afterwards adopted in Oudh, the Punjab, and other provinces.

20. About 1866 a re-action set in, and the control and audit of the Forest accounts was transferred to the Provincial Accountants-General. This arrangement did not give satisfaction, and in 1871 it was decided to entrust the Conservator of Forests in each Province with the entire control and audit of the accounts. Already in 1874 doubts were entertained as to whether the control and audit of the accounts was properly performed by Conservators, and an enquiry was held, the result of which was the introduction, in 1877, of a new system, which has gradually developed into that now in force.

It was arranged that the divisional accounts should continue to be rendered to the Conservator for scrutiny in the first instance, but that they should afterwards be transferred for final audit to the Comptroller General. For the latter purpose an officer of the Forest Department of some experience and standing was attached to the Comptroller General's Office, with the designation of Assistant Comptroller General.

This system contemplated that the Conservator should watch the stock accounts, the working accounts, and the revenue accounts, while the Comptroller General (Forests) should do the work of pure audit and account.

It was, however, soon found that a considerable amount of mechanical check was done twice—once in the Conservator's and a second time in the Comptroller General's Office. In order to see whether this could not be avoided, it was arranged, as an experiment, that the monthly accounts of divisional officers in the Lower Provinces of Bengal should be sent for examination and audit to the Comptroller General direct, without passing through the Office of the Conservator of Forests, the latter officer being kept informed of the progress of receipts and charges by being furnished with a copy of the classified abstract of receipts and charges, which is sent to him by the Divisional Officer on the same day as that on which he despatched his accounts to the Comptroller General. This experiment was commenced on the 1st April 1878, and, as the results were favourable, it was decided to extend the system to all the Provinces under the Government of India.

21. Since the 1st April 1880 the Forest Branch of the Comptroller General's Office does the work of departmental audit and control, as well as that of pure audit and account.

This system has been attended with most satisfactory results. The check is as perfect as under the circumstances of the case it can be made, and at the same time the preparation of, and the correspondence regarding, the accounts takes up as little as possible of the time and attention of Conservators and of Divisional Officers. Moreover, the entire business connected with the accounts is done by one central office and by an officer practically acquainted with forest business. This, it may be said, is as necessary in the Forest Department as it is in the Public Works and Military Departments, because in the present condition of the forest business a great deal more is required from the officer in charge of the accounts, than mechanical check and adherence to rules, such as might be expected where the accounts are in charge of an ordinary member of the Accounts Department who is unacquainted with the peculiarities of forest work. In the latter case it would be almost impossible to exercise a searching control over the timber transactions without taking up a large proportion of the time of the Divisional Officers by references and by asking for explanations.

22. It is believed that some general changes in regard to the organisation of the system of audit and account are contemplated by Government; but as regards the forests, it will be best to permit the continuous development of the system now in force. The peculiar circumstances of the forest business require that Conservators and Divisional Officers should be on the move constantly, and that their time should be taken up as little as possible by office and account work. Under these circumstances, the most economical arrangement is the maintenance of a central office in which all the work of control, audit and account is performed. No other arrangement can possibly be as economical as this, and if the control were again localised, the necessary result would be increased expense, leaving out of consideration the fact that Conservators and Divisional Officers would again be tied down to their desks— a result which would be detrimental to the working of the Department.

CHAPTER I.

RESERVED AND LEASED FORESTS.

Area and Boundaries.

23. The area of the Reserved Forests in the Provinces under the Government of India has undergone the following changes during the last five years:—

	Square miles.
Area on the 1st April 1877	17,386
" " 1878	17,671
" " 1879	14,673
" " 1880	14,890
" " 1881	16,246

As explained in the Review for 1878-79, the area of reserves was temporarily reduced in consequence of the passing of the Indian Forest Act of 1878. During the year 1879-80 the procedure prescribed in Chapter II of that Act was set in motion, but only a very small area was actually gazetted as reserves during that year. Since then, however, fair progress has been made, so that the area added during the year 1880-81 amounts to 1,356 square miles, and considerable further additions may be expected to take place for some years to come.

24. The details of the changes which took place during the year under review may be seen from the following statement:—

Province.	Area of Reserved Forests on		Legal authority under which forests have been reserved.
	1st April 1880.	31st March 1881.	
	Sq. miles.	Sq. miles.	
Bengal	2,945	3,411	Indian Forest Act, 1878.
North-Western Provinces and Oudh ...	3,279	3,313	Ditto ditto, and lease from the Garhwal State.
Punjab	795	913	Indian Forest Act, 1878; Hazára Forest Regulation, 1873; lease from Native States.
Central Provinces	2,535	2,535	Indian Forest Act, 1878.
British Burma	1,612	2,288	Government Forest Act, 1865, and Act VII of 1869.
Coorg	220	238	Government Forest Act, 1865.
Ajmere	101	122	Ajmere Forest Regulation, 1874.
Assam	2,015	2,015	Indian Forest Act, 1878.
Total ...	13,502	14,860	
Berar	1,388	1,386	Forest Rules, 1871.
Grand Total ...	14,890	16,246	

These areas have been reserved under a variety of legal enactments, and they may, accordingly, be classified as follows:—

	Square miles.
Under the Indian Forest Act, 1878	11,390
„ Government Forest Act, 1865, and Act VII of 1869	2,521
„ Local Rules, Hazára	236
„ „ Ajmere	122
„ „ Berar	1,386
Leased Forests	391
Total	16,246

25. **Bengal.**—It will be noticed that Bengal, where Forest conservancy in a systematic manner was started at a comparatively late date, has now surpassed all other Provinces, and a similar activity has been displayed in Assam. In Bengal an area of 466 square miles was added during the year, and proposals for further additions were under discussion at the close of the year.

North-Western Provinces and Oudh.—The small changes are due to corrections and transfers. It is, however, proposed to reserve additional areas in the Gonda and Gorakhpur Districts of Oudh, while a proposal is now before Government to establish forest and fodder reserves in the Central Circle. In Tehri-Garhwál and Bashahr considerable areas have yet to be brought on the books of the Department.

Punjab.—Although Forest conservancy was commenced at an early date, the work of establishing Reserved State Forests is very backward. Only an area of 943 square miles has been actually gazetted, of which 152 square miles were added during the year. It has been reported that the work preliminary to reservation has been pushed on during the year, but the delays that have occurred are far from satisfactory. No doubt the difficulties to be encountered are great, but the present state of affairs is all the more to be regretted, because in no other Province of India is the permanent maintenance as forest of a certain proportion of the area more important than in the dry climate of the Punjab.

Central Provinces.—No changes have taken place. The work of deciding what parts of the second class reserves should be transferred to the first class reserves remains to be done.

British Burma.—The work of reservation was, until a few years ago, very backward, but a vigorous start has been made lately, and 599 square miles were gazetted during the year, while an additional area of 1,091 square miles has been reported on by the Forest Settlement Officers. At this rate Burma will soon be brought on a par with the more advanced Provinces.

Coorg.—The changes recorded are chiefly due to corrections.

Ajmere.—21 square miles have been added during the year, and further reservations are contemplated.

Assam.—No change has taken place during the year under review, but various additions were expected to be made in 1881-82.

Berar.—Although only a correction, amounting to two square miles, has occurred, a very important measure was carried out during the year, namely, the formation of the Amraoti Hills Reserve as a "*forest and fodder reserve.*" Out of a total area of 49,847 acres, a block comprising 17,944 acres has been closed, while 31,903 acres remain open to meet the immediate wants of the people. The formation of reserves (not protected forests), like that on the Amraoti Hills, which are destined to provide permanent supplies of wood and fodder for the surrounding districts, is of the highest importance in all parts of India which are liable to suffer from periodical drought, and it is hoped that the example set by the administration in Berar may be imitated by the Governments of all Provinces similarly situated.

26. **Boundaries.**—The proper demarcation of the reserves is, of course, a measure of the first importance. Unless the boundaries are unmistakably laid down on the ground, protection is in most instances very difficult, if not impossible. In some cases the desire for economy has prevented the clearing of the boundaries, but there can be no doubt that this is false

economy, and the Government of India have on several occasions drawn attention to this point. The provincial reports should always give a clear idea how the work stands in the case of each reserve, shewing what part of the boundary is in good order, and what portion remains to be cleared or demarcated. This information should be given in miles of boundary and in the form of a tabular statement, either for each Division, or for the whole Province.

27. **Cost of Demarcation.**—The total cost of demarcation charged during the year amounts to Rs. 53,002, while the increase in the area of reserves is equal to 1,356 square miles. These data compare as follow with the corresponding figures of the two previous years :—

Year.	Area of reserves at the end of the year.	Outlay on demarcation, &c.
	Sq. miles.	Rs.
1878-79	14,673	38,855
1879-80	14,890	45,299
1880-81	16,246	53,002

The outlay on account of compensation for land and rights during the last three years stands as follows :—

Year.	Outlay.
	Rs.
1878-79	64,704
1879-80	4,610
1880-81	17,333

28. **Leased Forests.**—Of the area given above as Reserved Forests for 1880-81, 391 square miles are Leased Forests. The rent paid on account of these forests, including payments to shareholders in forests managed by Government, amounts to Rs. 75,341, which is distributed as follows :—

	Rs.
North-Western Provinces (for lease of forests in Tehri-Garhwal)	12,501
Punjab (including payments for the lease of the forests in Bashahr and Chamba, to shareholders in Kalesar, and half seigneurage on account of timber cut in the Hazára forests) ...	45,720
Berar (annual payment to Melghát Rajas)	17,120
Total ...	75,341

During the last five years the totals have been—

	Rs.
1876-77	61,774
1877-78	62,814
1878-79	62,174
1879-80	61,931
1880-81	75,341

This statement shows for 1880-81, an increase of Rs. 13,410 on the sum expended during the previous year, which is chiefly due to the payment of an instalment of Rs. 10,500 to the Rajah of Chamba, in the Punjab, in March 1881, instead of in April, when it became due.

Protection from Fire.

29. Fire protection is steadily extending, so that, in the British Provinces alone, upwards of two millions of acres have now been taken under protection. The following table shows the results obtained in 1880-81:—

Province.	Acres.	Outlay during the year.	Outlay per acre protected.	Total outlay from commencement.	Date to which expenditure has been incurred.	Year when fire conservancy commenced.
		Rs.	Rs. A. P.	Rs.		
Bengal	406,032	8,878	0 0 4	27,162	30th June 1881 ...	1872
North-Western Provinces and Oudh.	490,618	26,937	0 0 10	1,16,951	Ditto	1872
Punjab	...	...	...	...	.....	...
Central Provinces ...	869,828	13,383	0 0 3	1,14,379	30th June 1881 ...	1864
British Burma ...	76,858	10,577	0 2 2	76,297	Ditto	1867
Coorg	106,768	2,927	0 0 5	13,682	31st May 1881 ...	1876
Ajmere	75,658	1,139	0 0 3	4,793	30th June 1881 ...	1874
Assam	102,940	6,030	0 0 11	26,689	Ditto	1873
Total ...	2,128,702	69,871	...	3,79,953		
Berar	555,678	3,129	0 0 1	19,605	Ditto	1870
GRAND TOTAL ...	2,684,380	73,000	...	3,99,558		

The totals for the last 4 years, showing the areas attempted and the results, are as follow:—

Year.	Area attempted, in acres.	Failures, in acres.	Proportion of failures to area attempted, in per cent.
1877-78	2,075,327	332,936	16
1878-79	2,223,542	342,961	15
1879-80	2,606,130	232,104	9
1880-81	2,857,716	173,336	6

30. Although the percentage of failures has considerably decreased during the last two years, doubts are entertained whether this really indicates a substantial and lasting improvement. In the first instance, new and extensive areas have been taken under protection, which have not been shown separately from the areas protected previously; and, secondly, the last two years have been specially favourable for fire protection. The results of the season just passed, 1881-82, show that the above remarks are fully justified, as numerous and extensive fires have taken place in most Provinces simply because the season was unfavourable. Under these circumstances it cannot be said that, however favourable the results of the years 1879-80 and 1880-81 may have been, the business of fire protection has been fully mastered. The first thing to be done, under these circumstances, is not to extend the areas attempted any further until absolute success has been achieved for a number of years; and when, hereafter, operations are again extended, new areas must be shown separately, so as to enable Government to follow up the fate of each area through a number of years.

31. The following table shows the results of fire protection in the several Provinces for the last 4 years :—

BENGAL.

Year.	Area in acres.		Proportion of failures to area attempted, in per cent.	Cost per acre protected.
	Attempted.	Protected.		
				Rs. As. P.
1877-78	122,728	78,834	36	0 0 5
1878-79	189,653	106,754	44	0 0 4
1879-80	417,836	423,105	5	0 0 5
1880-81	460,396	406,032	12	0 0 4

ASSAM.

1877-78	89,761	60,028	33	0 1 0
1878-79	90,342	33,259	63	0 2 11
1879-80	92,605	91,935	...	0 1 1
1880-81	104,325	102,940	1	0 0 11

NORTH-WESTERN PROVINCES AND OUDH.

1877-78	376,384	344,658	8	0 0 10
1878-79	392,012	301,291	23	0 0 9
1879-80	429,413	423,169	1	0 0 10
1880-81	507,816	490,618	1	0 0 10

CENTRAL PROVINCES.

1877-78	702,310	575,301	18	0 0 3
1878-79	749,319	691,363	8	0 0 3
1879-80	827,470	715,773	13	0 0 3
1880-81	924,380	869,828	6	0 0 3

BRITISH BURMA.

1877-78	4,215	68,198	19	0 1 11
1878-79	74,867	71,322	5	0 2 2
1879-80	98,637	96,413	2	0 1 6
1880-81	96,218	76,858	20	0 2 2

COORG.

Year.	Area in acres.		Proportion of failures to area attempted, in per cent.	Cost per acre protected.
	Attempted.	Protected.		
				Rs. As. P.
1877-78	21,306	16,106	24	0 1 11
1878-79	82,166	76,896	6	0 0 9
1879-80	122,849	102,865	16	0 0 8
1880-81	123,278	106,768	14	0 0 5
AJMERE.				
1877-78	44,086	44,686	...	0 0 1
1878-79	44,086	44,659	....	0 0 3
1879-80	64,428	62,514	3	0 0 3
1880-81	76,631	75,658	1	0 0 3
BERAR.				
1877-78	633,937	554,577	12	0 0 1
1878-79	600,497	555,037	7	0 0 1
1879-80	522,892	458,252	12	0 0 1
1880-81	564,672	555,678	2	0 0 1

In the Punjab no special measures against forest fires have been considered necessary so far. In 1879-80 an area of 142,599 acres, or 5 per cent. of the total area under the management of the Forest Department, was overrun by fires. The subject was taken up vigorously by the Government and the Conservator of Forests, and, in consequence of a stricter control and supervision, the area burnt in 1880-81 amounted to 22,073 acres only, which is less than 1 per cent. of the total forest area managed by the Department.

32. The cost of fire-protection is as yet moderate, as will be seen from the subjoined abstract, giving the totals of all Provinces:—

Year.	Area successfully protected, in acres.	Cost.	
		Total.	Per acre.
		Rs.	Rs. As. P.
1877-78 ...	1,742,391	47,768	0 0 5
1878-79 ...	1,880,581	49,993	0 0 5
1879-80 ...	2,374,026	69,780	0 0 6
1880-81 ...	2,684,380	73,000	0 0 5
Average ...	2,170,344	60,135	0 0 5

has been planted with teak during the year, as may be seen from the subjoined data :—

	Area planted, in acres.			Outlay, in Rupees.	
	At the beginning of the year.	Added during the year.	Total.	Total from the commencement.	Per acre.
Regular plantations ...	3,389	155	3,544	3,14,274	89
Toungya do. ...	2,515	1,072	3,587	31,202	9
Total ...	5,904	1,227	7,131	3,45,476	48

It has been suggested that 200 acres of regular plantations, and at least 1,000 acres of toungya plantations, should be made annually. The cost of these operations was estimated at Rs. 40 per acre for the former, and Rs. 14 for the latter. The estimated areas have been fairly worked up to, but it appears that the cost of the regular plantations at any rate will be considerably higher than the estimate.

40. **Coorg.**—The area of plantations has been reduced from 580 to 328 acres, although 82 acres were planted during the year, in consequence of all unstocked areas having been omitted from the returns. The work seems to have received attention during the year, and the results were fairly satisfactory.

41. **Assam.**—Only 6 acres were added to the planted area, which stands now as follows :—

Species of tree.	Area planted, in acres.	Cost.	
		Total.	Per acre.
		Rs.	Rs.
Caoutchouc	912	51,885	57
Teak	150	13,767	92
Sissu	20	1,795	90
Bamboo	2	76	...
Cinchona	2	1,093	...
Miscellaneous	8	2,530	...
Total ...	1,094	71,146	...

The more important plantations are those of caoutchouc and teak. The importance of securing a permanent supply of teak wood is very great, and as Assam has excellent water communication, not only within its own limits, but also with Lower Bengal, it is important to ascertain whether the tree will thrive in Assam. For this purpose the area of 150 acres so far planted will probably be sufficient. As regards caoutchouc, it should be remembered

that Assam, and the neighbouring low hills, are the true home of the *Ficus elastica*, and that the produce of that tree forms an important article of trade. Unfortunately it has not been found practicable to protect the trees in the natural forests, which have suffered greatly from overtapping. At present the greater portion of the caoutchouc exported from Assam comes from beyond the British frontier; and it cannot be expected that the wild tribes who inhabit the tracts in question will work their India-rubber trees so as to secure a sustained yield. It is, therefore, the duty of the Government of Assam to prevent the trade dying out, by propagating the rubber tree on compact areas, which can easily be protected; in addition to protecting the natural trees, wherever this may be practicable.

42. **Ajmere.**—Planting operations were restricted to an extension of one acre, and the laying out of nurseries covering 9 acres of ground.

43. **Berar.**—No extensions were made, but 95 acres, which proved to be failures, were excluded from the returns. The result of fire protection has been that vast numbers of seedlings have sprung up all over the protected tracts, and this will, no doubt, reduce the necessity for artificial operations. At the same time there must be cases in which the forests are poor in the more valuable species, and where their introduction and extension, by means of planting or sowing, is indicated. It will be necessary, therefore, to resume planting operations as soon as the demarcation of the reserves and their protection against fire and otherwise have been sufficiently advanced to give to the staff the necessary time for such work.

44. Form No. 46, appended to the Annual Reports, gives the area of the regular plantations and their cost. Some of the plantations have, however, yielded considerable returns already, and, if the account is to be of value, these should be deducted from the cost; it is suggested, therefore, that the necessary information may be given in future Reports. It would also be a great improvement if, at the foot of the form, all works of reproduction which cannot be classed as regular plantations were mentioned, in so far as they can be represented by figures.

Forest Survey.

45. The survey of the submontane forests of Kumaun and Garhwál has been continued, while, in addition, certain operations were conducted in the Tons Division of the North-Western Provinces and in Berar. The total outturn of the field work is somewhat smaller than that of 1879-80. The area planetabled comes to 260 square miles, as against 318 square miles in 1879-80; and the area triangulated in 1880-81 amounts to 93, as against 237 square miles in 1879-80. The reason of the falling off is said to be the unhealthiness of the season, which caused a good deal of sickness amongst the staff, and the deputation of separate parties to Ranikhet and Berar, who did work which cannot be indicated in square miles.

46. The cost of the work, which was somewhat high when the Survey Branch was first organised, has been considerably decreased of late, as will be seen from the subjoined data:—

	Cost per square mile. Rs.
Dehra Dún and Saháranpur survey ...	310
Jaunsár and Tons „ ...	203
Kumaun and Garhwál „ (up to date)	115

This is, of course, very satisfactory, and if the cost is still somewhat higher than in the Imperial Survey Department, this is due to the fact that the operations of the Forest Survey are generally conducted in remote and difficult parts of the country, which have naturally been set aside as forests.

47. On the whole, the Forest Survey Branch has now been brought into a high state of efficiency. This being the case, it has been decided to establish shortly an Imperial Working-Plan Branch, which, following the footsteps of the Survey, will be a very important means towards introducing into our State Forests a system of working based on a sustained yield.

Outlay on Demarcation and Improvement of Forests.

48. The following figures show the outlay during the official year divided between the various branches of work:—

Province.	Demarcation, Improvement, and Extension of Forests.—A VIII.						
	Demarcation.	Compensation for land and rights.	Surveys and working plans.	Plantations.	Protection from fire.	Other works.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	6,161	7,115	201	10,344	11,630	68	35,519
North-Western Provinces and Oudh ...	4,513	5,804	1,939	2,463	23,571	10,915	49,205
Punjab	10,468	589	159	12,812	82	5,893	30,003
Central Provinces	1,526	208	978	3,968	13,456	14,052	34,188
British Burma	21,718	1,750	745	17,000	10,224	5,472	56,909
Coorg	1,678	50	215	7,166	2,833	...	11,942
Assam	4,730	154	4,747	13,820	5,609	3,060	32,120
Ajmere	2	1,663	...	1,667	1,145	46	4,523
Surveys	...	...	5,098	...	...	...	5,098
Total ...	50,796	17,333	14,082	69,240	68,550	39,506	2,59,507
Berar	2,206	...	76	1,303	3,373	460	7,418
Grand Total ...	53,002	17,333	14,158	70,543	71,923	39,966	2,66,925

The outlay under this head during the last five years has been as follows:—

	Rs.
1876-77	2,21,110
1877-78	2,42,962
1878-79	2,98,962
1879-80	2,55,647
1880-81	2,66,925
Average per annum ...	2,57,121

Communications and Buildings.

49. The outlay on communications, buildings, and other works charged in the accounts of the year has been as follows:—

Province.	Communications and Buildings.—A VII.			
	Roads and bridges.	Buildings.	Other works.	Total.
	Rs.	Rs.	Rs.	Rs.
Bengal	10,516	11,254	60	21,830
North-Western Provinces and Oudh ...	39,701	28,688	3,337	71,726
Punjab	4,553	3,624	24	8,201
Central Provinces	480	2,338	2,114	4,932
British Burma	1,920	6,618	683	9,221
Coorg	186	304	2	492
Assam	3,356	7,824	253	11,433
Ajmere	50	36	...	86
Surveys	...	...	...	...
Total ...	60,762	60,686	6,473	1,27,921
Berar	8,532	1,684	187	10,403
Grand Total ...	69,294	62,370	6,660	1,38,324

The following sums have been spent under this head during the last five years:—

				Rs.
1876-77	...	...	...	1,14,247
1877-78	...	...	...	1,11,779
1878-79	...	...	...	1,21,822
1879-80	...	...	...	1,66,193
1880-81	...	...	...	1,38,324
		Average, per annum	...	1,30,473

It will be noticed that the outlay during the year is slightly in excess of the average of the last five years.

50. **Bengal.**—Thirty-one miles of ordinary forest roads have been laid out, and a metalled cart road tapping the Goompahar Forest has been commenced. A rest-house for officers at Lopchu has been completed, while various smaller buildings and 5 boats (for the Sundarbans) were constructed.

51. **North-Western Provinces and Oudh.**—Communications and buildings have continued to receive attention during the year. The construction of forest roads and of timber slides was taken up vigorously many years ago, and this important branch of forest management has been specially advanced in the North-Western Provinces and in Oudh.

In the Central Circle much damage was done by the unusually heavy rains of September 1880, but most of the injured roads have since been repaired and additional lines opened. In Oudh 600 miles of old roads and fire-paths were kept in order, while 77 miles of new roads were opened out; at the same time 50 old bridges have been repaired and 6 new bridges constructed.

In the School Circle various roads in Dehra Dún, Saháranpur, and Jaunsár have been made. There are now 84 miles of fair-weather roads open in the Dún forests, and 130 miles of hill roads in Jaunsár.

The construction of forest rest-houses is steadily proceeding, 14 having been completed during the year. This is a most important measure, as a properly distributed system of rest-houses will enable the officers of the Department to visit all parts of their charges at any time of the year.

52. **Punjab.**—In the plains of the Punjab not much need be done by the Department as far as roads are concerned, since the forests are generally so open that the officers can "gallop" through them. In the hill forests, however, much remains to be done. During the year a new road from Natyagulli to Thandiáni, in Hazára, was commenced, and various paths and slides in other parts were made. It is hoped that no time will be lost in making the deodar forests thoroughly accessible; the success of the timber operations and of the cultural measures will depend on this.

A rest-house for officers, at Thandiáni, was purchased during the year, and various others have been repaired and extended. On the whole, there is a fair number of rest-houses in the Punjab forests.

53. **Central Provinces.**—The principal work, it appears, was the widening of a narrow passage in the Nerbudda.

54. **Burma.**—Only minor works and repairs were attended to during the year.

55. **Assam.**—A considerable length of inspection paths and other lines of communication were opened out, or kept open. At Cachar and Sibsagar forest bungalows were commenced during the year. At Barabada, in the Goalpara Division, a substantial rest-house for officers has been completed.

CHAPTER II.

MANAGEMENT OF GOVERNMENT FORESTS NOT RESERVED.

56. **Bengal.**—The Unreserved Forests so far taken notice of by Government are the following :—

	Sq. miles.
Sundarbans protected forests	1,925
Khordah „ „	400
Total ...	2,325
Angul open forests	Area unknown.
Jalpaiguri „ „	8
Chittagong „ „	5,100
Palamow „ „	33
Saranda (about)	400
Sonthal Pergunnahs (about)	60

In the Sundarbans no change in the system of administration has taken place during the year. The forests will remain under the direct management of the Forest Department until they are required for the extension of cultivation.

The Khordah forests are under the management of the Collector, assisted by a staff of Forest officials, and the Angul forests are now being examined. It has been suggested to constitute as reserves the more important parts of these forests, and to place the whole area under the direct management of a Deputy Conservator, who will be the Assistant to the Commissioner of Orissa in the Forest Branch.

The forests in the Sonthal Pergunnahs have hitherto been under the management of the Deputy Commissioner of the district, but it is now proposed to make them over to the Forest Department.

The Chittagong forests are under the management of a District Forest Officer, for the purpose of deriving a revenue from them, and he is subordinate to the Deputy Commissioner of the Chittagong Hill Tracts.

The forests in Jalpaiguri and Saranda are under settlement as reserves.

57. **North-Western Provinces and Oudh.**—The following is a list of the Unreserved Forests :—

	Sq. miles.
Naini Tal protected forests	38
Ranikhet „ „	59
Lalitpur „ „	3
Total ...	100

In addition, there are considerable areas of Government forests in Garwhal, Kumaun and the Terai, and of leased forests in Tehri-Garwhal and in Bashahr.

58. **Punjab.**—The area of gazetted Protected Forests amounts to 311 square miles, but the total area of all Unreserved Government and Leased Forests, including the rákhs, comes to 17,125 square miles, of which 3,851 square miles are under the management of the Forest Department; the rest are managed by the Deputy Commissioners. Of the area under the Forest Department, a very large portion is under settlement as reserves, while the Local Government has decided that others, as for instance the valuable deodar forests in Kulu, shall be gazetted as Protected Forests.

59. **Central Provinces.**—The so-called second class reserves in these Provinces are at present, to all intents and purposes, Unreserved Forests; their area amounts to 16,850 square miles, while there are, besides, 281 square miles of other Unreserved Forests, or a total of 17,131 square miles. The management of these forests has been fully explained in previous Reviews. It has been urged upon the Local Government that the first and most important step is to select the more valuable parts of the areas, especially in the vicinity of towns, large villages, and other centres of consumption, and to treat them as first-class reserves, while the remainder will yield chiefly pasture and fuel.

60. **British Burma.**—The area of Unreserved Forests in Burma is very large, and it may be roughly estimated as equal to, at least, half the area of the whole Province. Until lately, only teak was a reserved tree: from the 1st July 1882, however, a number of other trees will be reserved; payment has to be made on all material exported. On the whole, the restrictions enforced in the Unreserved Forests are as yet very moderate.

61. **Assam.**—No changes have taken place in the areas, which stand as follow:—

	Sq. miles
Protected Forests	689
Other Unreserved Government Forests	5,371
Total ...	6,060

The Forest Officers in Assam have been made subordinate to the Deputy Commissioners, and they now manage all forest lands.

62. **Berar.**—The Unreserved Forests cover an area of 2,870 square miles. It has been suggested that the management of these areas should be made over to District Forest Officers, who will be subordinate to the Deputy Commissioners. A classification of the areas is now being made, with the view of ascertaining what portions are required for the production of wood, as grass preserves, or grazing grounds, and what parts should be kept open for the extension of cultivation.

63. To sum up, it will be noticed that the information regarding the Unreserved Government Forests is, in several Provinces, as yet very scanty, and it is hoped that fairly accurate statistics will gradually be supplied under this head.

CHAPTER III.

PROTECTION OF FORESTS.

64. The following statement exhibits the number of prosecutions for breaches of forest rules during the year under review:—

Province.	Number of persons		
	Prosecuted.	Convicted or under trial.	Acquitted.
Bengal	143	112	31
North-Western Provinces and Oudh	1,008	824	184
Punjab	2,188	1,131	1,057
Central Provinces	1,770	1,554	216
British Burma	181	151	30
Coorg	7	3	4
Ajmere	285	122	163
Assam	121	105	16
Total ...	5,703	4,002	1,701
Berar	764	591	173
Grand Total ...	6,467	4,593	1,874

The totals for the last seven years may be seen from the subjoined table:—

Year.	Number of persons			
	Prosecuted.	Convicted or under trial.	Acquitted.	Percentage of acquittals on prosecutions.
1874-75	2,591	2,340	251	10
1875-76	4,088	3,714	374	9
1876-77	4,250	3,186	1,064	25
1877-78	4,527	3,158	1,369	30
1878-79	4,435	3,458	977	22
1879-80	6,724	5,311	1,413	21
1880-81	6,467	4,593	1,874	29

It will be observed that there has been a slight falling-off in 1880-81, which occurred in the Central Provinces, as compared with the previous year, and that the total number of prosecutions is exceedingly small as compared with the forest area under management. Roughly speaking, there has been during the year 1880-81 *one prosecution for every ten square miles of forest* under departmental management.

It stands to reason that improvement in general protection must temporarily be accompanied by an increase of prosecutions, but when further progress has been made, and the protective staff directs its energies chiefly to the prevention of breaches of the rules, rather than to the bringing of offenders to justice, a considerable falling off in the number of prosecutions must be the natural consequence.

65. On the whole, the Forest rules have been worked cautiously, and there are signs, from various parts of the country, that the people begin to appreciate the beneficial effects to themselves of forest conservancy, and that they commence to co-operate heartily with the Forest Department.

The Deputy Commissioner of Ellichpur in Berar, for instance, writes as follows:—

"I should like, for your information and the satisfaction of the officers of the Forest Department, to be allowed to record facts that came to my notice on four different occasions, when recently in the Melghat, which point markedly to the contentment of the people in that direction, and the success that has attended the enlistment of their help and interest in forest conservancy.

"Three of the occasions refer to the outbreak of fire in the State Reserves towards Asalwarrah and Gugamal, and towards Kupah in Bairaghar, when I personally witnessed the most rapid concentration of Kurkoos, many from very long distances, who came up in smaller or larger parties quite unbidden, merely on the sight of smoke. On two of these occasions towards Asalwarrah, and the supposed fire at Gugamal (which, however, turned out to be beyond), there were Kurkoos newly settled in the Gangra valley, who had no forest rights or privileges like their brethren settled in certain villages on the outskirts of the Reserve, and whom it was therefore proposed to pay in money for their trouble, but they declined, saying they had voluntarily turned out, hoping that the privileges given to the older people might be extended to them; that in return they would always be ready to turn out.

"At Kupah, in the neighbourhood of the Pili road, where the jungle was fired by a Bannia of the Public Works Department, and where the appearance of the fire was very alarming, and its extension would have done considerable harm, the rapid concentration of the people, some from extraordinarily long distances, was really very astonishing. The fire broke out late in the afternoon, some six miles from my camp, and I went to a neighbouring hill off the road to judge its position, when I saw over a hundred Kurkoos from my direction alone pass in bodies of five, ten, and more at the double. All of these had come away, unbidden, without their evening meal, with only a handful of parched gram, and were out the whole night.

"The fourth occasion was when most of the Patels of Bairagarh and Amnair met me at Chawarakund, a little more than a fortnight ago. Hitherto one of the requests of such an assemblage has invariably been to ask for the curtailment of some portion or other of the reserve; so that more teak (which is getting exhausted in the open tracts) might be available to them; but on this last occasion, except by one Patel, no such proposition was made. On my asking, somewhat surprised for the reason, why? several answered that, though it was true teak was getting exhausted outside the Reserves, yet the preservation of bamboos *within the reserves* compensated them in a way they had not formerly foreseen; that more bamboos could now be got than, owing to the destruction by fire, was ever formerly possible; and that this to them was of great value. It was a decided advance and very pleasing to me to see that the value of our forests was thus beginning to be recognised."

The Resident writes thus:—

"The Officiating Resident desires to acknowledge the ready and liberal spirit in which the Conservator of Forests and Forest Officers generally responded to applications made to them by Civil Officers during the anxious months of July and August, when, the rains having failed, the people were in difficulties about fodder for the cattle. Liberality on an occasion like this does a great deal to make the Department popular with the people."

And the Government of India, in passing orders on the Report for Berar, say:—

"The Governor General in Council has noticed with special gratification that the people have commenced to appreciate the benefit to themselves of forest conservancy, and particularly of protection against fire; this result is, no doubt, largely due to a judicious working of the conservancy rules."

When the organisation indicated in the Introduction of this Review has taken root, there will be no reason why a similar state of affairs should not be established in all other Provinces.

CHAPTER IV.

YIELD AND FINANCIAL RESULTS.

66. Statement I appended to this Review exhibits the Receipts and Charges of the Department in the Provinces under the Government of India for the year 1880-81.

By arranging these data according to the three main heads under Receipts and Charges, the following table has been obtained:—

Particulars.	Receipts.		Charges.		Surplus.	Deficit.
	Amounts.	Budget heads.	Amounts.	Budget heads.		
	Rs.		Rs.		Rs.	Rs.
1. Timber and other produce removed on Government account.	19,25,505	I.	13,08,087	I, ½ of VI, ½ of B.	6,17,418	...
2. Timber and other produce removed by purchasers, and other revenue.	31,41,301	II, III, IV, V.	6,69,514	II, III, IV, IX, ½ of VI, ½ of B.	24,71,787	...
3. Formation, protection, and improvement of the forests.	...	...	11,21,742	V, VII, VIII, ½ of B.	...	11,21,742
Total ...	50,66,806	...	30,99,343	...	30,67,463	...

The next table shows the revenue realised and the charges incurred under the two main heads of revenue during the last seven years:—

Year.	Government Agency.			Other Sources.		
	Receipts.	Charges.	Surplus.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1874-75	21,34,690	18,07,019	3,27,671	23,69,694	4,40,196	19,29,498
1875-76	31,29,321	15,38,779	15,90,542	21,91,392	4,90,326	17,01,066
1876-77	22,82,060	17,29,567	5,52,493	23,14,098	5,26,298	17,87,800
1977-78	25,51,986	14,74,551	10,77,435	25,65,567	5,41,608	20,23,959
1878-79	19,98,685	14,36,246	5,62,439	25,35,910	5,99,403	19,36,507
1879-80	20,82,474	13,74,193	7,08,281	28,19,270	6,35,912	21,83,358
1880-81	19,25,505	13,08,087	6,17,418	31,41,301	6,69,514	24,71,787
Average ...	23,00,674	15,24,063	7,76,611	25,62,462	5,57,608	20,04,854

67. These tables were introduced some years ago, and they are useful in showing the total results under each head. At the same time they contain a somewhat dangerous element, in so far that they may convey a wrong impression. The net surplus of the departmental operations during the year under review amounts to Rs. 6,17,418, while that derived from timber, &c., removed by private parties comes to Rs. 24,71,787. At first sight the departmental operations do not compare favourably with the working by private parties, but unless the quantity and quality of material removed under each system is given, it is impossible to draw any conclusions as to their merits. Only in a few cases have these data been supplied, but it may be useful to enter here, for the sake of illustration, those for the Punjab as far as they can be ascertained. The table for that Province for 1880-81 is as follows :—

Particulars.	Receipts.	Charges.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
I. Departmental timber operations	3,22,143	2,53,422	68,721	...
II. Other revenue	3,49,536	1,02,802	2,46,734	...
III. Formation, protection and improvement of the forests	...	1,39,144	...	1,39,144
Total ...	6,71,679	4,95,368	1,76,311	...

The quantities of timber and other produce worked out by Government Agency compare as follow with those removed by purchasers :—

Description of material.	Removed by Government Agency.	Removed by private parties.
Timber, cubic feet	476,208	463,320
Firewood, cubic feet stacked	1,140,161	4,981,568
Other items, as bamboos, grazing and fodder grass, &c., value in rupees.	15,725	218,545

Deducting the last two items from the surplus given in the statement preceding the above table, the financial results, as regards the removal of timber and firewood, may be *approximately* represented as follow :—

	Material removed.		Surplus of Receipts over charges.
	Timber.	Firewood.	Rs.
	Cubic feet.	Cubic feet.	
Government Agency	476,208	1,140,161	52,996
Private Enterprise	463,320	4,981,568	28,189

It will be seen that the amount of timber is about the same in either case : the amount of firewood removed by private parties is, however, more than four times that removed by Government Agency, while the surplus derived is only about one-half ; and it follows that the working by Government Agency has financially been more profitable to Government than the work done by private agency. The data given, though only rough, show further how small the surplus derived from the sale of timber and fuel is, as compared with the receipts from other sources ; in other words, Government sell timber and fuel at the lowest price admissible without actual loss to the State.

It is very desirable that the discussion of this subject should be fully entered into in the provincial reports.

68. Statement II appended to this Review exhibits the financial results of the Forest Department in India.

Bengal and Assam.—Amongst the British provinces, Bengal and Assam head the list. Their revenue has risen from Rs. 38,584 in 1865-66 to Rs. 7,30,337, or twenty times the former amount. During the year under review the revenue of these two Provinces, as compared with the previous year, shows an increase of Rs. 1,16,477, which, with the exception of Rs. 4,661, occurred in Bengal. On the whole, it seems probable that the revenue of Bengal will gradually surpass that of any other Province under the Government of India, with the exception of Burma, which is very satisfactory, especially if it is remembered that forest conservancy on a satisfactory footing was commenced in Bengal only 10 years ago.

69. **North-Western Provinces and Oudh.**—The revenue has risen, between 1865-66 and 1880-81, from Rs. 7,70,370 to Rs. 9,42,229; but there has at the same time been a falling off for several years past. It appears that many of the forests were worked beyond their capability for a number of years, and the consequence is a decline in the revenue, until continued conservancy and protection from fire justify again more extensive cuttings.

70. **Punjab.**—Although the revenue has risen from Rs. 2,08,050 to Rs. 6,71,679, it has oscillated in a manner simliar to that observed in the North-Western Provinces, and for the same reason. Here also many forests have been overcut.

71. **Central Provinces.**—The revenue shows the best results after Bengal and Assam, it having in the same period risen from Rs. 2,02,614 to Rs. 8,50,139. There has, however, been a serious decline during the last year, amounting to Rs. 1,56,584.

72. **British Burma.**—The revenue has risen from Rs. 8,98,629 to Rs. 15,16,613, it having stood on one occasion as high as Rs. 17,79,020. In future there will be a loss of revenue amounting to Rs. 2,50,000 per annum, owing to the reduction of duty on foreign timber from 7 per cent. to 1 per cent. *ad valorem*. Still the Burma State Forests are probably the most valuable in India from a financial point of view, and, under proper conservancy, their value should increase further.

73. **Madras.**—The forest revenue has risen from Rs. 3,26,204 to Rs. 5,01,839, the rise having taken place during the year under review.

74. **Bombay.**—The revenue has, during the last sixteen years, risen from Rs. 10,07,610 to Rs. 15,22,807.

75. **Berar.**—In this non-British Province the revenue has developed in the same manner as in Bengal and Assam, it having risen from Rs. 15,106 to Rs. 2,66,556. There has, however, been a decline during the last three years.

76. The following abstract shows the total financial results of the Forest Department in India during the last seventeen years, arranged in periods of five years :—

Year.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1864-65 to 1868-69, (average per year)	35,83,334	21,66,765	14,16,569
1869-70 to 1873-74 „ „	54,71,755	37,96,784	16,74,971
1874-75 to 1878-79 „ „	64,42,051	42,98,872	21,43,179
1879-80	67,92,206	45,45,757	22,46,449
1880-81	71,05,828	45,82,859	25,22,969

This table shows that the revenue and expenditure have increased in about the same proportion, which is satisfactory, if it is remembered that a much larger share of the expenditure is now devoted to the protection and improvement of the forests than was the case in the earlier years of forest administration.

77. The surplus forest revenue of the British Provinces, that is, excluding Berar—and Beluchistan for 1880-81—during the last three years, has been as follows:—

Presidency.	Year.		
	1878-79.	1879-80.	1880-81.
	Rs.	Rs.	Rs.
Bengal	12,29,982	15,96,541	18,29,876
Madras	41,890	*Def.* 15,478	1,49,835
Bombay	1,82,732	4,68,399	4,07,711
Total ...	14,54,604	20,49,462	23,87,422

There has been a slight falling-off in Bombay during the last year; but on the whole, these data show satisfactory progress.

78. **Export of Forest Produce.**—The subjoined table gives the quantities of the principal items of forest produce exported from India:—

Articles.	Quantity in tons of 20 cwt.; in the case of Teak, 50 Cubic Feet.		Valuation at Port of Shipment in 1880-81.	
	Average of ten years, 1870-71 to 1879-80.	In 1880-81.	Total.	Per ton.
			Rs.	Rs.
1. Caoutchouc	599	490	10,61,686	2,186
2. Shell-lac	3,007	3,042	43,16,287	1,419
3. Lac-dye	603	315	1,30,201	413
4. Sandalwood, Ebony, and other ornamental woods.	505	(Not known.)	2,78,568	(Not known.)
5. Cutch and Gambier ...	10,911	15,803	42,22,527	267
6. Myrobalans	20,577*	15,781	12,37,087	78
7. Teak	41,495	65,626	50,00,466	76
Total ...	...	...	1,62,46,822	...

The exports of cutch and teak have been larger than the average of the last ten years, while those of lac-dye and myrobalans have fallen off. The total value of the articles exported, at port of shipment, amounts to Rs. 1,62,46,822, as compared with Rs. 1,19,05,024 in 1879-80, which represents an increase of Rs. 43,41,798 in the year under review.

* Average of five years only.

79. **Sandalwood.**—The quantity of sandalwood sold in Coorg during the last three years is shown in the following table:—

Year.	Tons.	Amount realised.	
		Total.	Per Ton.
		Rs.	Rs.
1878-79 ...	33¾	14,346	425
1879-80 ...	101	35,890	355
1880-81 ...	112	20,160	180
Average ...	82	23,465	286

The falling-off in the rate realised in 1880-81 is due to the large proportion of inferior wood which has been sold during the year.

80. **Teak.**—The following table exhibits the trade in teak in British Burma during the last three years:—

Year.	Yield of Government Forests in British Burma.	Imports from Foreign Territory.	Total.	Exports from Rangoon and Moulmein to Indian and other ports.
	In tons of 50 cubic feet.			
1878-79 ...	22,763	170,610	193,373	133,820
1879-80 ...	17,585	157,260	174,845	121,161
1880-81 ...	22,253	124,618	146,871	151,274

The imports from foreign territory have fallen off considerably of late, but now that the duty has been reduced from 7 per cent. to 1 per cent. *ad valorem*, a great increase may be expected, whereby, in addition to the loss of Rs. 2,50,000 on account of duty, a considerable reduction in the price of the teak timber derived from the British forests may be anticipated, unless an increased demand should make up for it.

As girdling operations have been resumed, the yield of the Government forests in British Burma is likely to rise up to about 35,000 tons annually. For the present the yield should not be extended beyond that limit, in order to enable the British forests to make up for the falling-off in imports, which must occur ultimately.

81. **Boxwood.**—During the last two years several consignments of Himalayan box-wood were sent to England. The first of these realised as much as £30 per ton, and it was bought up on speculation by engravers, as it was wood from a new locality. The results have, however, not been satisfactory; the wood cut up badly, and it was found useless for engraving, owing to its being too soft and short-grained. Information has been received that engravers will not buy the consignments now remaining unsold in England. Shuttle-makers and rule-makers may possibly buy it, but it is not likely that more than £15 to £18 per ton will be realised, which is too small a price to make the production and export of boxwood a profitable transaction.

STATEMENT I.

SUMMARY of REVENUE and EXPENDITURE during the YEAR 1880-81.

BUDGET HEADS.	Bengal.	North-Western Provinces and Oudh.	Punjab.	Central Provinces.	British Burma.	Coorg.	Assam.	Ajmere.	Surveys.	Total of British Provinces under the Government of India.	Hyderabad Assigned Districts.	Grand Total.
Receipts.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
I.—Timber and other produce removed from the forests by Government agency.	1,61,567	4,40,358	3,15,711	76,157	8,61,487	50,932	18,768	13	...	19,24,993	512	19,25,505
II.—Ditto ditto by consumers or purchasers	3,66,192	4,90,176	3,23,368	7,41,669	1,89,086	32,589	1,32,758	600	...	22,76,438	2,62,707	25,39,145
III.—Confiscated drift and waif wood	4,470	6,642	6,432	5,046	1,28,099	...	3,597	...	...	1,54,286	1,491	1,55,777
IV.—Revenue from forests not managed by Government ...	...	...	9,396	10,192	3,25,201	...	12,669	...	...	3,57,458	...	3,57,458
V.—Miscellaneous	29,111	5,053	16,772	17,075	12,740	4,336	1,205	511	272	87,075	1,846	88,921
Total Receipts ...	5,61,340	9,42,229	6,71,679	8,50,139	15,16,613	87,857	1,68,997	1,124	272	48,00,250	2,66,556	50,66,806
Expenditure.												
A.—CONSERVANCY AND WORKS.												
I.—Timber and other produce removed from the forests by Government agency.	84,032	2,29,414	1,28,939	1,39,931	3,36,679	14,334	9,480	18	...	9,42,827	103	9,42,930
II.—Ditto ditto by consumers or purchasers ...	29,565	28,742	2,128	1,46,064	8,071	...	3,090	15	...	2,17,675	15,913	2,33,588
III.—Confiscated drift and waif wood	936	721	914	...	40,943	...	109	...	...	43,623	...	43,623
IV.—Revenue from forests not managed by Government ...	...	...	2,591	...	...	...	...	...	...	2,591	...	2,591
V.—Rent of leased forests, and payments to shareholders in forests managed by Government.	...	12,501	45,720	251	...	...	...	...	...	58,472	17,120	75,592
VI.—Live and dead stock	16,671	18,999	3,637	10,368	20,752	2,816	10,283	85	2,602	86,213	3,200	89,413
VII.—Communications and buildings.	21,830	71,726	8,201	4,932	9,221	492	11,433	86	...	1,27,921	10,403	1,38,324
VIII.—Demarcation, improvement, and extension of forests. ...	35,519	49,205	30,003	34,188	56,909	11,942	32,120	4,523	5,098	2,59,507	7,418	2,66,925
IX.—Miscellaneous	1,066	4,110	3,144	4,652	5,291	372	2,681	28	...	21,357	3,199	24,556
Total Conservancy and Works ...	1,89,619	4,15,418	2,25,277	3,40,386	4,77,866	29,956	69,209	4,755	7,700	17,60,186	57,356	18,17,542
B.—ESTABLISHMENTS.												
I.—Salaries	1,24,723	2,21,355	2,24,343	1,29,891	1,92,711	21,106	60,501	6,738	24,679	10,06,047	60,402	10,66,449
II.—Travelling allowances	16,153	31,434	32,903	14,665	32,053	4,472	9,746	742	5,476	1,47,644	6,119	1,53,763
III.—Contingencies	4,886	11,367	12,845	10,571	9,938	953	3,269	188	2,480	56,497	5,092	61,589
Total Establishments ...	1,45,762	2,64,156	2,70,091	1,55,127	2,34,702	26,531	73,516	7,668	32,635	12,10,188	71,613	12,81,801
Grand Total of Expenditure ...	3,35,381	6,79,574	4,95,368	4,95,513	7,12,568	56,487	1,42,725	12,423	40,335	29,70,374	1,28,969	30,99,343
Surplus ...	2,25,959	2,62,655	1,76,311	3,54,626	8,04,045	31,370	26,272	...	...	18,29,876	1,37,587	19,67,463
Deficit ...	...	...	...	...	...	...	...	11,299	40,063	...	...	...

STATEMENT II.

Receipts and Charges of the Forest Department throughout India during the seventeen years from 1864-65 to 1880-81.

RECEIPTS.

Provinces.	1864-65.	1865-66.	1866-67 (11 months).	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	...	38,584	50,555	75,687	2,24,546	1,13,753	1,19,678	1,39,088	1,42,851	1,16,633	1,85,933	1,98,274	2,22,401	4,26,228	4,16,024	4,49,524	5,61,340
North-Western Provinces and Oudh	6,93,644	7,70,370	7,79,200	5,77,644	7,85,211	8,33,077	4,25,257	11,70,901	19,39,114	19,32,677	13,63,358	12,64,356	11,50,671	12,03,108	11,26,755	10,39,966	9,42,229
Punjab	2,95,730	2,08,050	2,31,470	2,79,297	3,45,164	3,94,132	10,40,368	7,35,002	6,52,994	7,32,540	8,34,874	9,05,742	5,98,754	6,83,710	5,00,620	6,49,819	6,71,679
Central Provinces	89,307	2,02,644	3,67,095	3,49,491	3,50,536	4,16,020	6,58,120	4,47,764	4,81,673	5,68,367	6,61,779	7,25,335	6,61,326	6,83,910	8,52,862	10,06,723	8,50,139
British Burma	9,36,233	6,98,629	4,24,053	6,47,590	8,16,171	9,84,773	8,18,124	7,72,399	8,27,469	10,68,621	10,74,802	17,79,020	15,51,468	16,03,023	11,37,562	11,80,190	15 16,613
Coorg	1,02,218	1,08,257	31,934	77,746	74,448	1,08,152	74,067	92,453	84,424	1,10,079	58,012	1,07,457	75,929	1,01,015	52,020	1,01,786	87,857
Ajmere	...	...	...	...	...	...	...	...	24	508	203	410	905	3,002	1,241	1,861	1,121
Assam	...	...	...	...	...	...	...	...	...	62,726	64,749	1,07,302	81,568	1,34,326	1,61,779	1,64,336	1,68,997
Surveys	...	...	...	...	...	...	...	...	...	...	...	...	...	...	63	38	272
Total ...	21,17,132	22,26,534	18,84,307	20,07,455	25,96,076	28,49,907	31,35,614	33,57,607	41,35,549	45,92,151	42,43,710	50,87,896	43,43,022	48,38,322	42,48,926	45,94,243	48,00,250
Madras	3,11,778	3,26,204	3,38,608	4,24,184	3,91,179	4,95,789	3,39,762	4,18,682	4,18,767	4,64,194	3,64,326	4,26,359	4,15,312	4,04,164	3,83,694	3,65,750	5,01,839
Bombay and Sind	10,70,210	10,07,610	8,21,268	8,84,245	12,13,482	12,35,257	11,77,425	11,50,210	11,46,904	11,88,090	12,23,995	12,48,672	12,26,658	12,61,529	11,81,893	15,24,712	15,22,807
Total Revenue (British India)	34,99,120	35,60,348	30,44,183	33,15,884	42,00,737	45,80,953	46,52,801	49,26,699	57,00,720	62,44,435	58,32,031	67,62,927	59,84,992	65,04,015	58,14,513	64,84,705	68,24,896
Hyderabad Assigned Districts ...	2,368	15,106	43,574	53,446	84,556	1,45,481	1,77,329	1,55,544	2,69,861	2,63,256	2,60,674	2,32,817	2,53,136	2,79,231	2,85,670	3,07,501	2,66,556
Biluchistan " " ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	14,376
GRAND TOTAL OF REVENUE	35,01,488	35,75,454	30,87,757	33,69,330	42,85,293	47,26,434	48,30,130	50,82,243	59,60,581	65,07,691	60,92,705	69,95,744	62,38,128	67,83,246	61,00,183	67,92,206	71,05,828

STATEMENT II—*continued.*

EXPENDITURE.

A.—On Conservancy and Works.

Provinces.	1864-65.	1865-66.	1866-67 (11 months).	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	2,092	19,480	69,326	1,41,382	95,581	61,004	26,272	43,907	28,526	28,552	39,062	68,255	90,172	1,46,857	2,10,914	1,50,295	1,89,619
North-Western Provinces and Oudh.	3,82,780	2,45,158	2,66,187	2,74,818	3,69,869	3,59,149	5,94,829	8,95,931	9,54,515	9,72,991	8,75,039	5,40,335	6,50,002	5,09,798	5,72,085	4,63,591	4,15,419
Punjab	1,62,120	1,94,110	1,76,950	1,75,920	1,93,516	5,55,375	10,30,005	4,78,003	5,45,068	3,54,457	4,19,305	3,18,498	2,70,330	2,58,949	2,58,952	2,20,827	2,25,277
Central Provinces	35,610	88,504	46,817	1,13,068	1,86,925	3,65,801	1,95,251	1,24,621	1,39,666	1,67,010	1,78,513	2,40,523	1,67,334	1,78,401	2,36,029	3,58,380	3,40,386
British Burma ...	1,77,158	2,21,739	2,04,591	2,25,049	3,22,981	3,11,404	2,89,445	2,45,514	2,03,929	3,32,391	5,31,841	6,60,515	8,22,061	6,40,062	5,00,783	5,29,692	4,77,866
Coorg	4,688	3,995	4,425	5,354	7,175	22,851	14,822	20,714	18,324	23,001	23,773	25,991	18,493	16,453	14,671	30,542	29,956
Ajmere	...	...	...	...	...	...	...	...	4,878	15,777	17,753	12,963	11,433	6,961	5,182	5,280	4,755
Assam	...	...	...	...	...	...	...	...	...	18,901	31,138	33,187	42,005	48,954	64,519	72,157	69,209
Surveys	...	...	...	...	...	...	...	...	8,303	7,420	3,906	5,134	7,684	10,024	10,863	8,655	7,700
Total ...	7,64,448	7,22,986	7,88,296	9,35,591	11,76,047	16,75,584	21,50,624	18,08,690	18,97,209	19,20,500	21,20,330	19,05,401	20,79,517	18,16,459	18,73,798	18,39,419	17,60,186
Madras	94,657	1,36,528	1,14,251	1,62,037	1,32,693	1,46,821	1,56,779	1,94,814	3,03,735	1,75,370	2,21,864	2,39,945	1,94,943	1,59,867	1,24,406	1,63,367	1,32,206
Bombay and Sind	3,17,699	5,63,067	4,36,470	3,32,175	3,87,412	3,28,985	3,84,638	3,27,729	4,34,612	4,11,547	5,20,049	4,80,801	5,30,394	5,36,477	6,37,117	6,59,701	6,93,935
Total (British India) ...	11,76,804	14,22,581	13,39,017	14,29,803	16,96,152	21,51,390	26,92,041	23,31,233	26,35,556	25,07,417	28,62,243	26,26,147	28,04,854	25,12,803	26,35,321	26,62,487	25,86,327
Hyderabad Assigned Districts ...	...	...	...	2,184	6,552	22,018	43,034	62,759	45,062	44,117	45,514	42,287	40,506	49,715	39,544	42,352	57,356
Biluchistan „ ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6,015
GRAND TOTAL ...	11,76,804	14,22,581	13,39,017	14,31,987	17,02,704	21,73,408	27,35,075	23,93,992	26,80,618	25,51,534	29,07,757	26,68,434	28,45,360	25,62,518	26,74,865	27,04,839	26,49,698

STATEMENT II—*continued.*

B.—On Establishments.

Provinces.	1864-65.	1865-66.	1866-67 (11 months).	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	6,604	16,292	14,881	24,223	30,676	34,870	60,186	64,429	71,090	56,936	60,341	70,831	1,21,517	1,14,354	1,27,757	1,25,453	1,45,762
North-Western Provinces and Oudh	92,893	1,06,125	1,05,282	1,08,204	1,31,090	1,69,531	1,81,047	2,01,020	2,07,917	1,92,949	1,85,663	1,95,994	2,10,247	2,18,427	2,37,892	2,53,003	2,64,156
Punjab	84,665	77,968	78,680	97,955	1,15,828	1,58,279	2,03,951	2,27,321	2,50,874	2,42,705	2,27,175	2,35,728	2,52,153	2,58,217	2,64,602	2,59,849	2,70,091
Central Provinces	61,946	74,994	81,041	99,031	1,07,730	1,08,445	1,12,182	1,07,059	1,14,171	1,16,546	1,15,796	1,30,240	1,21,306	1,39,277	1,57,686	1,64,193	1,55,127
British Burma	86,081	90,327	80,544	1,03,339	99,191	1,10,058	1,11,293	1,32,935	1,32,095	1,42,140	1,30,797	1,54,235	1,92,980	2,15,754	2,17,618	2,23,798	2,34,702
Coorg	4,201	8,654	7,127	8,610	9,301	10,231	9,777	10,267	11,340	11,708	14,226	11,688	14,836	19,814	20,158	24,622	26,531
Ajmere	...	...	...	...	...	...	...	...	8,177	8,563	8,813	14,383	11,025	7,965	8,263	8,470	7,668
Assam	...	...	...	...	..	...	...	...	...	31,721	28,385	28,697	47,915	51,333	61,508	60,673	73,516
Surveys	...	...	...	...	...	...	...	...	12,875	42,852	57,614	53,959	49,620	49,684	49,662	38,222	32,635
Total of Establishment Charges ...	3,36,390	3,74,360	3,67,555	4,41,862	4,93,816	5,91,414	6,78,436	7,43,031	8,08,539	8,46,120	8,28,740	8,95,655	10,11,799	10,74,825	11,45,146	11,58,283	12,10,188
Total of all Charges ...	11,00,838	10,97,346	11,53,851	13,76,953	16,69,863	22,66,998	28,29,060	25,51,721	27,05,748	27,66,620	29,49,070	28,01,056	30,91,316	28,91,284	30,18,944	29,97,702	29,70,374
Madras	95,309	1,17,054	1,02,920	1,26,223	1,37,779	1,39,870	1,38,081	1,50,902	1,74,412	1,77,814	1,76,008	1,90,138	2,19,027	2,22,626	2,17,398	2,17,861	2,19,798
Bombay and Sind	2,10,352	2,11,987	2,10,973	2,14,962	2,39,711	2,15,811	2,38,125	2,57,035	2,78,430	2,93,990	2,96,071	2,97,676	3,01,548	3,20,407	3,62,044	3,96,612	4,21,161
Total of Establishment Charges (British India).	6,42,042	7,03,401	6,81,443	7,82,547	8,71,306	9,47,095	10,54,642	11,50,968	12,61,381	13,17,924	13,00,819	13,83,469	15,32,374	16,17,918	17,24,588	17,72,756	18,31,147
Total of all Charges (British India).	18,18,846	21,25,932	20,20,465	22,12,350	25,67,458	30,98,485	37,46,683	34,82,201	38,96,937	38,25,341	41,63,062	40,09,616	43,37,228	41,30,721	43,59,909	44,25,243	44,37,474
Hyderabad Assigned Districts ...	478	8,911	13,718	16,157	27,553	58,692	38,938	33,071	37,994	41,523	45,875	48,586	54,146	60,253	67,806	68,162	71,613
Biluchistan ,, ,, ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10,401
Grand Total of Establishment Charges.	6,42,520	7,12,392	6,95,166	7,98,704	8,98,859	10,05,787	10,93,580	11,89,039	12,99,375	13,59,447	13,46,694	14,32,055	15,86,520	16,78,171	17,92,394	18,40,918	19,33,161
Grand Total of all Charges.	18,19,324	21,34,973	20,34,133	22,30,691	26,01,563	31,79,195	38,28,655	35,83,031	39,79,993	39,10,981	42,54,451	41,00,489	44,31,880	42,40,689	44,67,259	45,45,757	45,82,859

STATEMENT II—*concluded.*

SURPLUS REVENUE.

PROVINCES.	1864-65.	1865-66.	1866-67 (11 months).	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
British India, excluding Madras and Bombay.	10,16,294	11,29,188	7,28,456	6,30,502	9,26,213	5,82,909	3,06,554	8,05,886	14,29,801	18,25,531	12,94,640	22,86,840	12,51,706	19,47,038	12,29,982	15,96,541	18,29,876
The Presidency of Madras ...	1,21,821	72,622	1,21,437	1,35,924	1,20,707	2,09,098	44,902	73,166	(Deficit 59,380)	1,11,010	(Deficit 33,546)	(Deficit 3,724)	1,342	21,671	41,890	(Deficit 15,478)	1,49,835
of Bombay ...	5,42,159	2,32,556	1,73,825	3,27,102	5,85,359	6,90,461	5,54,662	5,65,446	4,33,362	4,82,553	4,07,875	4,70,195	3,94,716	4,04,585	1,82,732	4,68,399	4,07,711
TOTAL NET REVENUE (BRITISH INDIA).	16,80,274	14,34,366	10,23,718	11,03,534	16,33,279	14,82,468	9,06,118	14,44,498	18,03,783	24,19,094	16,68,969	27,53,311	16,47,764	23,73,294	14,54,604	20,49,462	23,87,422
Hyderabad Assigned Districts ...	1,890	6,115	29,856	35,105	50,451	64,771	95,357	54,714	1,76,805	1,77,616	1,69,285	1,41,944	1,58,484	1,69,263	1,78,320	1,96,987	1,37,587
Biluchistan ,, ,, ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	(Deficit 2,040)
GRAND TOTAL OF NET REVENUE.	16,82,164	14,40,481	10,53,574	11,38,639	16,83,730	15,47,239	10,01,475	14,99,212	19,80,588	25,96,710	18,38,254	28,95,255	18,06,248	25,42,557	16,32,924	22,46,449	25,22,969

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REVIEW

OF THE

FOREST ADMINISTRATION

IN THE

SEVERAL PROVINCES UNDER THE GOVERNMENT OF INDIA,

FOR THE YEAR

1881-82:

BY

W. SCHLICH, PH. D.,

INSPECTOR GENERAL OF FORESTS TO THE GOVERNMENT OF INDIA.

Dated the 15th May 1883.

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A

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IN THE

SEVERAL PROVINCES UNDER THE GOVERNMENT OF INDIA,

FOR THE YEAR 1881-82,

BY

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CHAPTER I.—INTRODUCTION.

1. RETIREMENT OF MR. BRANDIS.

THE most important event in Indian Forest Administration, during the year 1881-82 was the retirement of Mr. D. Brandis from the office of Inspector General of Forests, consequent on his deputation on special duty to the Madras Presidency. Mr. Brandis made over charge of his office on the 15th October 1881; he remained in Madras until January 1883, when he proceeded on three months' privilege leave, at the end of which period he joined at the India Office in London, in order to assist in the re-organization of the arrangements for the education of the candidates for the Indian Forest Department; and since then he has finally retired from the Service.

2. Mr. Brandis was appointed Superintendent of Forests in Pegu, British Burma, in January 1856, and in 1857 the forests of Tenasserim and Martaban were added to his charge. In December 1862 he was placed on special duty under the Government of India to assist in organizing Forest Administration in other provinces; and on the 1st April 1864 he was appointed the first Inspector General of Forests to the Government of India. This appointment he has held for the long period of 19 years.

3. While holding the appointment of Superintendent of Forests in British Burma, Mr. Brandis thoroughly explored the teak forests of that province, and put their administration on a satisfactory footing. It was due principally to his determination, under great difficulties, that these valuable estates, which yield now an annual revenue of 22 lakhs of rupees, were saved to Government. Since his transfer to the Government of India in 1862, he has incessantly laboured to perfect the organization of the Department in the various provinces under the Government of India—a task to the performance of which he brought, not only a thorough command of details and an accurate knowledge of the requirements of Forest Administration, but a remarkable faculty of adapting means to ends, and of varying his suggestions to suit the circumstances of different parts of India. His numerous Inspection Reports and Reviews show at what a cost of personal exertion and self-sacrifice he mastered the conditions of Forest Conservancy in all parts of India; and his directions and instructions will for many years form the standard manuals for the guidance of those who may come after him.

4. Services similar to those which he has rendered to the Government of India have been given by him to the cause of Forestry in the minor presidencies also. In 1869 he was deputed to Bombay, and the organization of the Department in that presidency, which has worked remarkably well, is based on the proposals made by him. Mr. Brandis' deputation to the Madras Presidency, in October 1881, to confer with the Local Government on the whole subject of Forest Conservancy and Forest Legislation, entailed on him an amount of hard work and exposure which few men of his age would have cared to face, and which only his enthusiastic devotion to his profession would have induced him to undergo. The result of his mission to Madras has been to place the establishment of Forest Administration in that presidency on a sound footing, and his services have been acknowledged in the warmest terms by His Excellency the Governor in Council.

5. All legislation which has taken place on the subject of Forests in India has been carried through on Mr. Brandis' advice and with his assistance. In 1865 the first Indian Forest Act was passed, which defined the legal position of Government forests and provided for their protection and better management. This Act was amended in 1878, when the present Indian Forest Law, Act VII of 1878, came into force. The latter Act has been extended to the Provinces under the Government of India and to Bombay, but not to British Burma. In 1881 a special Act for Burma was passed, and in 1882 the Madras Forest Act received the assent of His Excellency the Governor General in Council.

6. Scarcely recovered from a severe illness, contracted in the performance of his arduous duties in India, Mr. Brandis was employed in England for about 18 months from October 1872 in continuing and completing an account of the Forest Flora of North-West and Central India—a work of the highest literary excellence, and which is of the greatest use, not only to Forest Officers in those parts of India, but also to Indian Botanists. He was also instrumental in causing the preparation and publication of several other works of the highest importance to Forest Officers. Amongst these are the "Forest Flora of British Burma," by S. Kurz; the "Manual of Indian Timbers," by J. S. Gamble; the "Manual of the Land Revenue Systems and Land Tenures of British India," by B. H. Baden-Powell; and the "Manual of Jurisprudence for Forest Officers," also by B. H. Baden-Powell.

7. Throughout his service Mr. Brandis has laboured to create a competent and efficient staff of superior and subordinate officers. The Science of Forestry, in its true meaning, being little known in this country when conservancy measures were first introduced, Mr. Brandis arranged, while in England in 1866, under the orders of Her Majesty's Government, for the professional education of the candidates selected for the Indian Forest Service. The measures then inaugurated by him have secured to India a staff of trained Forest Officers, to whose exertions the rapid development of the operations of the Department is in a large measure due.

8. Having thus provided for the recruiting of the superior staff, Mr. Brandis set to work on the establishment of an Indian Forest School, in which a competent staff of Rangers or Executive Officers could be trained. He submitted his scheme for such a School at Dehra Dun to the Government of India in 1877, and in the following year the School was opened. Some time elapsed of course before the institution could be brought into proper working order, but this has now been accomplished, and it is expected that, after the lapse of another year or two, thirty trained Rangers will leave the School annually.

9. Mr. Brandis has thus, during a period of twenty-seven years, been at work in building up a new branch of the public service. The difficulties in his way were very great, and it may be said, without exaggeration, that throughout this long period there has not been a day on which, if not actually incapacitated by illness, he has not been labouring in the cause of Forest Conservancy in this country. Apart from the important advantages which have thus been

secured to India, owing to the influence which well-preserved forests exercise on the climatic conditions of the country and the economic well-being of the people, Mr. Brandis' exertions have been accompanied by a substantial pecuniary benefit to the Government of India, the revenue from the Government forests, which amounted to 35 lakhs of rupees in 1864, having now risen to 95 lakhs of rupees.

10. Mr. Brandis' services have been acknowledged by the Government of India in the warmest terms. The *Gazette of India* of the 5th May 1883 contained the following Notification, dated the 1st idem :—

His Excellency the Governor General in Council desires to place upon public record his recognition of the eminent services rendered to the State by Mr. D. Brandis, PH.D., C.I.E., Inspector General of Forests to the Government of India, who has left India with the intention of retiring from the service of Government.

Mr. Brandis has served in the Forest Department since January 1856, and has for the last nineteen years been Inspector General of Forests to the Government of India. During this long period he has laboured incessantly and successfully to perfect the organisation and working of the Department in all parts of the country, and under his able administration the Forest revenues have risen from 35 to 95 lakhs of rupees. The directions and instructions embodied in his numerous Inspection Reports and Reviews will, for many years to come, form the standard manuals for the practical guidance of Forest Officers. It is hoped that after his retirement Mr. Brandis will supplement the services he has rendered to the cause of Forest education in this country by assisting the Government at home to place the training of candidates for the superior staff of the Department upon a sound and permanent basis. The warmest thanks of the Government of India are due, and are hereby tendered, to Mr. Brandis.

2. Re-organization of the Superior Staff.

11. During the year 1881-82 a re-organization of the superior staff of the Department has been worked out, and, although it did not come into force until the 3rd September 1882, it will be useful to indicate here the general lines of the new organization.

Apart from the appointment of Inspector General of Forests to the Government of India, the following staff has now been sanctioned :—

		Per mensem. Rs.
3	Conservators of Forests, 1st grade, on ...	... 1,500 each.
3	„ „ 2nd „ „ ...	... 1,250 „
4	„ „ 3rd „ „ ...	... 1,000 „
9	Deputy Conservators of Forests, 1st grade, on	... 900 „
9	„ „ 2nd „ „	... 800 „
17	„ „ 3rd „ „	... 650 „
17	„ „ 4th „ „	... 550 „
17	Assistant Conservators of Forests, 1st „ „	... 450 „
17	„ „ 2nd & 3rd grades, on	... 350 & 250 each, respectively.

		Per mensem. Rs.		Rs.
1	Deputy Director of the Forest School, rising by annual increments of Rs. 40 from ...	700	to	900
1	Professor of Physical Sciences at the Forest School, rising by annual increments of Rs. 40 from ...	600	to	800
1	Deputy Superintendent of Forest Surveys, rising by annual increments of Rs. 40 from ..	600	to	800
1	Superintendent of Working-Plans, rising by annual increments of Rs. 40 from ...	600	to	800
	Allowance to the Director of the Forest School. ...			200

or a total of 100 Officers arranged in the following classes :—

Conservators	10
Deputy Conservators, including Special Appointments	56
Assistant Conservators	34
Total ...	100

12. This staff has been arranged in five lists, namely:—

(1) Bengal—Assam.

(2) North-Western Provinces and Oudh.

(3) Punjab.

(4) Central Provinces—Berar.

(5) British Burma.

In addition there are six Special Appointments, which it was not considered necessary to include in any local list. The allotment of the entire staff is as follows:—

Provinces.	Conservators.	Deputy Conservators.				Assistant Conservators.			Grand Total.
		1st and 2nd grades.	3rd grade.	4th grade.	Total.	1st grade.	2nd and 3rd grades.	Total.	
1. Bengal—Assam	2	3	4	3	10	3	4	7	19
2. North-Western Provinces and Oudh	3	3	3	4	10	4	3	7	20
3. Punjab	1	3	3	4	10	4	3	7	18
4. Central Provinces—Berar	2	3	4	3	10	3	4	7	19
5. British Burma	2	4	3	3	10	3	3	6	18
Special Appointments.									
Deputy Director of the Forest School ...	...	1	...	...	1	...	...	...	1
Professor of Physical Sciences at the Forest School.	...	...	1	...	1	...	...	...	1
Deputy Superintendent of Forest Surveys	...	...	1	...	1	...	...	...	1
Superintendent of Working-Plans ...	...	...	1	...	1	...	...	...	1
Officer in charge of the Coorg Forests ...	...	1	...	...	1	...	...	...	1
Assistant Comptroller General (or Assistant to the Inspector General of Forests)	...	1	...	...	1	...	...	...	1
Total ...	10	19	20	17	56	17	17	34	100

One officer of the North-Western Provinces and Oudh List will be attached to the Forest Survey Branch, and one officer of the British Burma List will be stationed in the Andamans.

13. The Rules regulating the appointment and promotion of Officers of the Forest Department will be found amongst the Appendices to this Review. First appointments to the superior staff are made by the Government of India; subsequent promotions up to and including Deputy Conservators of the 2nd grade are made by Local Governments. Promotion to the 1st grade of Deputy Conservators is, owing to their small number, given by the Government of India, who also appoint and promote all Conservators of Forests and the incumbents of the six Special Appointments.

The Superintendent of Forest Surveys and the Superintendent of Working-Plans are directly subordinate to the Inspector General of Forests. The Forest Survey Branch has been in full working order for some years past, but the Working-Plan Branch has yet to be developed.

3. Subordinate Staff.

14. The subordinate staff varies considerably according to the local requirements of the different provinces. With one or two exceptions, it has, however, now been recognized in all provinces that the most important measure of the immediate future is the creation of a staff of competent Forest Rangers, who, with the Sub-Assistant Conservators, will be the real executive officers of the Department. Hitherto the members of the superior staff had either to attend to the executive work, or to entrust it to a staff of low-paid and ill-educated Foresters. The former arrangement is too expensive, and the latter is even more objectionable, because the class of Foresters hitherto employed is not fitted

for the work on account of their imperfect knowledge and a want of trustworthiness in many instances.

In order to put forest management on a lastingly satisfactory footing, it is necessary to divide each of the hitherto very extensive Forest Divisions into a suitable number of Ranges of reasonable extent, each to be administered by a Forest Ranger or a Sub-Assistant Conservator.

4. Dehra Dun Forest School.

15. It has already been stated in last year's Review that the first course of theoretical instruction was held in the summer of 1881. The second course was similarly held from the 1st July to the end of October 1882, thirty-three students having taken part in it. Arrangements have now been made to receive annually thirty new students at the School, and it is hoped that in this manner a sufficient staff of Rangers will be trained within a reasonable period.

16. The conditions for the admission and training of candidates for the appointment of Forest Ranger at the Forest School will be found amongst the Appendices to this Review. The main points are that only men who have passed the entrance examination of an Indian University on the English side shall be admitted, and that they must have served for at least one year as Foresters before they join the School. In this manner a sufficient standard of education is ensured, while candidates have proved their fitness for forest work before they are permitted to attend the School. The students join on the 1st July and attend the lectures from that date until the 31st October; they are then employed on practical work from the 1st November to the 1st July following, either on ordinary executive work, or with the Working-Plan Branch. From the 1st July to the 31st October of the second year they attend a second course of lectures, and they can earn the Ranger's certificate at the end of 16 months. Students who do not come up to the required standard at the end of 16 months may, at the discretion of the Director of the School, be either relegated to their provinces without the Ranger's certificate, or retained for an additional year.

17. The instruction given during the theoretical courses may be seen from the following abstract:—

(1)—Forestry.

(a)—First year's course:—Objects and importance of Sylviculture. Structure, functions, and chemical composition of Plants. Climate. Soils.

(b)—Second year's course:—The struggle for existence. Classification of Indian Forests. Creation and regeneration of Forests.

Hereafter, it is hoped, some instruction in Working-Plans and Forest-Utilization will be added.

(2)—Botany.

(a)—First year's course:—Elements of structural and physiological Botany.

(b)—Second year's course:—Classification. Natural orders of the more important Indian Plants.

There are also weekly excursions and microscopic demonstrations.

(3)—Physical Science.

(a)—First year's course:—The principal subjects of *Physics* treated are:—Endosmose, gravity, specific gravity, transmission of sound, heat, the atmospheric air and its pressure, evaporation of water, the properties of light. Some instruction is also given regarding lenses, microscopes, telescopes, the magnetic needle,

the galvanic battery, and also regarding the various applications of electricity for purposes of signalling and the transmission of power.

In *Chemistry* the instruction extends to the more important gaseous and other elements and compounds required to understand the phenomena of vegetable life, and the action of soil, water, and air. Metals and their compounds, with reference to the nourishment of plants, and the components of soils and of the ashes of plants. Some idea is also given of the general constitution of organic compounds.

(b)—Second year's course :—Mineralogy, especially the most common and important minerals. The most important forms of crystallization; hardness, cleavage, chemical composition. Use of the blow-pipe.

Geology.—The different kinds of rocks, with special reference to composition and age. The Indian formations.

Chemical Practice.—The common re-actions of inorganic analysis. Analysis of various minerals and soils. Analysis of the ashes of woods, partly qualitative and partly quantitative.

(4)—Law.

Special Forest Law.

(5)—Mathematics.

Arithmetic, Geometry, Mensuration.

Surveying.—Up to the Lower Standard, comprising surveying with the chain, prismatic compass and chain, planetable and chain; levelling.

(6)—Entomology.

A general introduction into the subject and the more important natural orders.

18. Hitherto the want of a Manual of Sylviculture has been much felt, but good progress in the preparation of one has now been made, and it is expected that it will be roughly in print by the end of the current year. Mr. Baden-Powell's excellent Manuals on "Jurisprudence for Forest Officers" and "The Land Revenue Systems and Land Tenures of British India" have now been published, and they will be of the greatest use to all Forest Officers, as well as to others.

5. Fuel and Fodder Reserves.

19. Since the publication of the last Review, the question of the establishment of Fuel and Fodder Reserves has been further advanced by the Revenue and Agricultural Department of the Government of India, in consultation with the Forest Department. A Circular Resolution, No. 16A. of the 1st March 1883, has been issued by that Department, in which the attention of the Local Governments of Upper India [Punjab, North-Western Provinces and Oudh, Central Provinces, Berar] is drawn to the growing decrease in the area of grazing lands and wooded tracts in many parts of Upper India, as well as to their deterioration in quality and their change in character, the latter being partly due to the excessive grazing which the reduction in area has made necessary. It is pointed out that apparently at present the agricultural population will not, or cannot, themselves take sufficient precautions to provide against exceptional occurrences, and that they trust to accident or to assistance from Government. But, in a matter like this, little or no help can be afforded unless systematic arrangements are made in advance, and continuously maintained, under which a supply of fodder in a year of drought may be secured. The general outlines of the scheme which commends itself to the Government of India as most likely to secure the desired results, and which from

enquiries made appears likely to meet with the most general acceptation, are described as follow in the Resolution quoted above :—

The general control and administration of the measures with which this Resolution is concerned should, in the opinion of the Government of India, be primarily in the hands of the local officers, viz., the Commissioner, the District Officer, and his subordinates in charge of sub-divisions. The official channel through which the Local Government would communicate with the divisional and district officers would be the Agricultural Department, which would be responsible for providing the Government with advice and information, and for maintaining continuous action. The actual management of the lands set apart for the supply of fodder and fuel would be placed in the hands of Forest officials, who alone can be expected to establish and maintain without interruption a scientific system of treatment.

In order to satisfy the above conditions, it would be necessary, in each district or division in which operations are likely to be sufficiently extensive to require scientific management, that an officer of the Forest Department should, when financial circumstances admit of this being done, be placed under the orders of the district or divisional officer. He would work entirely under the orders of the Civil Officer, who would, however, refer questions of a professional or technical character for the advice of the chief Forest Officer of the Province or Circle. In many districts the necessary staff exists already, but in others new posts will have to be created.

It must not, however, be expected that arrangements can be made, financially or otherwise, under which every district or division can, in every part of the Upper Provinces in which the measure would be useful, be supplied with a separate Forest Officer for the work contemplated. It would, indeed, be extremely unwise to enter upon any expensive organisation until much more experience and information have been acquired. It is only, therefore, for those regions in which grazing lands are disappearing at a rapid rate, or in which history has shown that drought causes extensive destruction of cattle, that any application for the services of special officials could at present be entertained. It will probably be considered sufficient if at first a Forest official is attached as assistant to the Commissioner in one or two of the divisions in each province in which protection is most required.

In the meanwhile the serious duty will devolve upon the district officers of ascertaining how far the cattle need protection, and the extent of land, whether the property of Government or purchasable from land-owners at a reasonable price, which can be made available for fuel and fodder reserves. For this purpose an analysis of every district should be made by the local officials, which will show its need for protection against drought, and the extent to which land is available for fuel and fodder reserves. They may also be directed to enquire how land can be most advantageously secured for the required purposes in districts where a sufficient quantity of Government land is not available, how far the landholders themselves or Local Boards will be able to co-operate with the Government in the matter, and at what cost suitable areas can be procured.

The Agricultural Department will probably at present be most usefully employed in ascertaining by actual experiment, and in consultation with the Forest Department, what are the best means of bringing waste lands into a condition in which they can most economically provide a supply of fodder in a year of drought, and in what way they can in ordinary years be most profitably employed. The Department would also superintend, in correspondence with Commissioners, the analysis required by the preceding paragraph, and would review for the Local Governments the reports received from each Division. The same Department may also ascertain whether any system of stacking hay or storing fodder can be established, or whether it may not be useful to close grazing reserves for a portion of the year, especially when other fodder, such as the stubble of newly-reaped crops, is available. For if grass reserves are only thrown open when no other food is available, the grass will have the requisite opportunity to make head, and will thus provide a much more ample supply of fodder than if exposed continually to desultory grazing. Enquiries of this kind will fall within the scope of the Agricultural Department.

This Resolution is not the place in which the treatment of land required for conversion into fuel and fodder reserves can be considered in any detail. But the opportunity may be taken to give expression to the opinion of the Government of India that little real good can be effected unless the reserves are, at any rate for some years, brought under the control of Government, and systematically protected against the invasion of goats, cattle, and fire. It appears to be a matter susceptible of proof that a protected area will, besides giving security in a year of drought, afford over a certain number of years a considerably larger amount of fodder than an unprotected area of equal extent. It seems probable that the difference is sufficiently great to admit of a hope that fuel and fodder reserves can, in a large number of instances, be made financially successful.

The Resolution concludes as follows :—

If the conclusions indicated by the facts and arguments adduced in the preceding paragraphs can be accepted, the objection which has not unfrequently been brought forward to the occupation of grazing lands, on the score of the inconvenience suffered by the adjacent population in being deprived of their cattle pasture, is greatly diminished. The occupation is

only temporary. The inconvenience which is temporarily occasioned to the agricultural population is due to their own action in diminishing the efficiency of their grazing lands by an improper use of them. The Government proposes to do no more than restore, and, if possible, to increase, the efficiency which has been lost. The measure contemplated will, it is believed, result in a future supply of fodder which will be far larger and far more certain than that of which the owners of the cattle have been deprived. In this view it may be even found desirable to attach, for conversion into fuel and fodder reserves, land which has been broken up under the plough, but which as fodder reserves would be more profitable in preserving cattle from starvation, than in growing crops which are subject to failure in a year of drought.

6. Forest Law.

20. In continuation of the Indian Forest Act of 1878, special Acts for Burma and Madras have now been passed. In both instances the provisions of Chapter IV of the Indian Act, dealing with "Protected Forests," have been considerably altered. While the Indian Act admits two classes of demarcated forests (besides village forests)—namely, reserved forests and protected forests—both the Burma and Madras Acts recognize only one class of demarcated forest estates—namely, reserved forests—in which all rights have been duly inquired into, settled, and regulated, while the springing-up of new rights is made impossible. For the rest of the Government forests, provision is made to regulate their use, but no attempt is made to fix or settle rights. It will probably be necessary to recast Chapter IV of the Indian Act at no distant date, in order to prevent mischief, which may be caused by proceeding under it in order to avoid the more detailed provisions which have purposely been introduced by the Legislature into Chapter II, so as to provide not only for the thorough protection and management of the permanent Government forest estates, but also for the protection of the right-holders, who must be dealt with fairly and equitably by proceeding under Chapter II.

CHAPTER II.—AREA AND BOUNDARIES.

General.

21. The areas of the Government Forests with which the Forest Department is concerned stood as follow on the 1st April 1882 :—

Province.	Area, in square miles.				Remarks.
	Reserved.	Protected.	Unreserved.	Total.	
Bengal	4,236	2,325	5,108	11,669	
North-Western Provinces and Oudh ...	3,326	98	85	3,509	
Punjab	1,160	311	3,323	4,794	
Central Provinces	19,430*	...	289	19,719	* 2,588 are first class, the rest are second class reserves.
British Burma	3,274	...	...	3,274	
Coorg	234	...	...	234	
Ajmere	122	...	...	122	
Assam	2,066	659	5,286	8,011	
	33,848	3,393	14,091	51,332	
Berar	1,394	...	3,030	4,424	
Biluchistan	...	...	26	26	
Total ...	35,242	3,393	17,147	55,782	
Madras	1,182	...	...	1,182	
Bombay	9,789	5,219	...	15,008	
Grand Total ...	46,213	8,612	17,147	71,972	

The area of Unreserved Forests has not been given in all instances, but it is hoped that the missing information will be supplied in future Reports.

22. The area of reserved forests in the Provinces under the Government of India has increased as shown below, since the passing of the Indian Forest Act in 1878:—

	Square miles.
Area on the 1st April 1878	17,671
„ „ 1879	31,602
„ „ 1880	31,785
„ „ 1881	33,141
„ „ 1882	35,242

The increase during the last year amounted to 2,101 square miles, which took place in the following provinces:—

Province.	Area of reserved forests, in square miles.	
	Increase during 1881-82.	Total on the 1st April 1882.
Bengal	825	4,230
North-Western Provinces and Oudh	13	3,326
Punjab	217	1,160
Central Provinces	.....	19,430
British Burma	986	3,274
Coorg	1	234
Ajmere	.....	122
Assam	51	2,066
Total ...	2,093	33,848
Berar	8	1,394
Grand Total ...	2,101	35,242

According to the law under which these areas have been reserved, they may be classified as follow:—

	Square miles.
Under the Indian Forest Act, 1878	29,580
Ditto Forest Act of 1865 and Act VII. of 1869	3,508
Ditto Local Rules, Hazara	236
Ditto ditto Ajmere	122
Ditto ditto Berar	1,394
Ditto Leases	402
Total ...	35,242

The above data do not agree with those given in previous Reviews, because the latter included only the first class reserves in the Central Provinces. In these provinces an area of 19,430 square miles was declared reserved forests in 1879 under Chapter II. of the Indian Forest Act of 1878; but as only part of this area is subjected to the intense management usually adopted in the case of reserves, it was divided into first and second class reserves. Only the former were entered in the statement of reserves; but as no difference exists between the two classes, as far as their legal status is concerned, the total area has now been entered, and the figures for past years have been corrected accordingly.

Bengal.

23. The progress of reservation in Bengal has been very rapid, as may be seen from the following data:—

	Square miles.
Area of reserved forests on the 1st April 1873	106
Ditto 1874	120
Ditto 1875	1,467
Ditto 1876	2,585
Ditto 1877	3,390
Ditto 1878	3,430
Ditto 1879	2,967
Ditto 1880	2,945
Ditto 1881	3,411
Ditto 1882	4,230

Eleven additional forests have been gazetted under section 4 of the Indian Forest Act, but their area is not known. It is expected that the work of reservation will be completed at an early date. The demarcation of the reserves has been completed in most divisions. No change has taken place in the area of protected forests, which remains at 2,325 square miles.

The examination of private forests in Chota Nagpore has been continued, with the view of bringing them under conservancy, but no definite proposals have yet been made. It will be interesting to follow this attempt to extend the benefits of systematic conservancy to the extensive private forest estates in that province.

North-Western Provinces and Oudh.

24. The areas have remained almost stationary, but considerable tracts are available for further extension of the Government forest areas under systematic management. In Banda 85 square miles have been taken up, and it is intended to increase this area to 120 square miles. The reservation of additional tracts in Gonda and Gorakhpur seems to be still pending, while much remains to be done in Tehri-Garhwal and in Bashahr.

The state of the boundaries has received attention during the year, but some demarcation remains to be done.

Punjab.

25. The work connected with reservation has been somewhat more satisfactory than in the previous year. 217 square miles have been added to the reserves, and the settlement of 320 square miles is reported as complete, while that of 380 square miles was in progress at the close of the year. On the whole, the area of reserves amounted only to 1,160 square miles, which is only a fraction of what is required for the welfare of the people and the requirements of the State.

26. No change has taken place in the area of the protected forests, which remains at 311 square miles. Some misapprehension still exists in the Punjab in regard to the object of protected forests, and there is a tendency of declaring areas which are permanently required for forests "protected" under Chapter IV of the Forest Act, instead of "reserves" under Chapter II. There can be no doubt that all areas permanently required as forests should be constituted reserves, and that only such areas should be gazetted under Chapter IV of the Act as protected forests regarding which it is as yet doubtful whether they will be wanted ultimately for the production of forest produce, but which require nevertheless a certain amount of protection in the meantime. Chapter IV does not make all the necessary provisions for the proper management of the permanent forest estates; and when once a detailed enquiry has been made into rights and other circumstances, it should be decided at once what areas shall be declared reserves, and what parts can be made available for cultivation or other purposes. No useful object can be gained by letting such lands pass through an intermediate stage as protected forests, thereby offering facilities for the acquisition of fresh rights. On the other hand, Chapter II of the Indian Forest Act has been so framed that Local Governments can make the protection of reserves as stringent or as lenient as may be required in each instance.

Central Provinces.

27. In the Central Provinces circumstances were favourable for the formation of reserves, as the areas at the disposal of Government had been declared free of rights at settlement. When the Forest Act had been passed in 1878, it was decided to declare all Government waste lands in the province reserved forests under Chapter II of the Act. Thus an area of 19,430 square miles was set aside permanently for forests. Having put the estates

on a satisfactory legal basis, arrangements were made to secure their greatest usefulness both to the people and the State. Certain areas, called first class reserves, which amount now to 2,588 square miles, were selected for more intense management, while the rest, called second class reserves, were set aside, under certain restrictions, for the supply of the ordinary requirements of the people. Gradually additional areas will be brought under more systematic management, while the effects of protection have been so marked that some of the first class reserves yield already large quantities of produce.

As regards the boundaries, much remains to be done, but it should be remembered that the area of the reserves is very considerable. A great effort has been made of late to expedite the work of demarcation.

British Burma.

28. The demarcation and settlement of reserves has again been pushed on most vigorously, an area of 986 square miles having been added to the previous reserves during the year. The progress during the last five years will be seen from the following data:—

		Square miles.
Area on the 1st April	1878	... 650
Do.	1879	... 1,410
Do.	1880	... 1,612
Do.	1881	... 2,288
Do.	1882	... 3,274

Of the total reserved area, 398 square miles are toungya areas—that is to say tracts in which, though forming part of the reserves, the people (Karens) are permitted to carry on toungya (temporary) cultivation. These blocks are all properly demarcated, and the arrangement has this great advantage that reservation keeps the indigenous people on the ground. The work has been done in a thorough manner, and the results are very satisfactory. On this subject the Chief Commissioner writes as follows:—

Great pains have been taken by the officers employed on forest demarcation to ascertain and sift the claims of the neighbouring inhabitants in respect of the forests proposed for reservation, and the claims put forward have been dealt with liberally and indulgently. Wherever the removal of villages from forest land has been found necessary, and such cases have been but few, the utmost consideration has been shown for the convenience of the people in fixing the time for moving, and compensation has been made on a generous scale for the trouble involved in shifting their dwellings. In many instances, the formation of a reserve is a direct benefit to the people, particularly Karens living near it, who thereby obtain remunerative employment from the Forest Department. The Karens as a body no doubt dislike forest reservation, not because it brings them distinct hardships, but because it put restraints on the boundless license they have been wont to enjoy.

And the Conservator of Forests of the Pegu Circle writes as follows:—

The Karens themselves say that once they were like jungle-fowls, hiding where they liked, scratching the earth here and there, and putting in a grain of rice and eating what came of it, if the nats (spirits) permitted; but that now the Forest Department put them into boundaries here and boundaries there, and that they feel like pigs in a pen. But after a certain time has elapsed they rarely deny that their latter state is preferable to their former, more especially in or near fire-traced reserves, where work is constantly obtainable. With the careful way in which enquiries are made, and privileges and rights granted, we have a right to expect such favourable results.

29. In this manner the most valuable forests in India, the Teak Forests of Burma, are at last being secured as permanent forest estates, without pressing upon the indigenous people of the country. The struggle has, however, been very prolonged, and successive Conservators have taken a share in it. It was commenced as early as 1856 by Mr. Brandis, supported by Colonel (now Sir Arthur) Phayre, and the obstacles in the way have only quite lately been overcome.

The work in the Pegu Circle is now far advanced, and its conclusion may be expected at an early date. In the Tenasserim Circle much more remains to be done, but here also no time is being lost in pushing on the work.

Ajmere.

30. The area taken under management as reserves has not been increased during the year, but enquiries have been set on foot with a view to secure an extension of the areas under forest conservancy at the time of the next settlement, which will be commenced in 1884. Experience has already shown the great benefits which Forest Conservancy is likely to bestow upon Ajmere and Merwara, and it is essential that the forest area should be increased until it is capable of yielding all the forest produce and the grazing required by the people, not only in ordinary years, but also in times of scarcity; in particular, it will be necessary to secure a sufficient area to provide fodder for cattle, as a safeguard against their being reduced by starvation and disease in years of drought, or to prevent the necessity of their being driven to other districts in such years.

Assam.

31. An area of 51 square miles was added to the reserves during the year, and it is reported that the reservation of several additional forests is in contemplation; it is satisfactory to notice that most of these forests are situated in districts which have as yet a small area of reserves. On the whole, the forests of Assam are very unevenly distributed over the province, one-half of the total area being situated in one district, Lakhimpur, while in others, like Nowgong, Kamrup, and Sylhet, only very small areas are available. The following statement, showing the distribution of the Government forests, may prove interesting:—

Civil District.	Area of Government Forests, in square miles.		
	Within revenue limits.	Beyond revenue limits.	Total.
Goalpara	437	.....	437
Garo Hills	.....	351	351
Kamrup	129	.....	129
Nowgong	55	.....	55
Darrang	479	.....	479
Khasi and Jaintia Hills	50	100	150
Sibsagar	331	.....	331
Naga Hills	455	525	980
Lakhimpur	2,494	1,500	3,994
Sylhet	269	.....	269
Cachar	825	11	836
Total ...	5,524	2,487	8,011

Nearly one-third of the forests are at present beyond revenue limits, and consequently of little use; but, as civilization advances, these areas will no doubt become of value in the same degree as the private forests in the level and more accessible parts of the country disappear before the axe of the indigenous cultivator and of the tea planter.

Berar.

32. Of a total forest area of 4,421 square miles, 1,394 square miles have been definitely set aside as reserves. A re-classification of the remaining estates is now in progress, with the object of deciding what areas shall be maintained as forests, grass preserves, or grazing grounds, and what can be made available for the extension of cultivation. The areas permanently set aside for the production of wood, grass, and other forest produce have hitherto been classified as State Reserves, District Reserves, Rhamnas, Babul Bans, Grazing Grounds, &c. It will, however, be best to put all such lands on the same legal footing by

declaring them "reserves" under the proposed Forest Regulation, and to classify them according to their purposes in the rules to be passed under the Regulation. This plan would once for all put a limit on the further alienation of land and the acquisition of new rights, while any particular block may be set aside for the production of wood or grass, as may be required from time to time.

Biluchistan.

33. A commencement has been made to bring some lands in the vicinity of Sibi, measuring about 26 square miles, under forest conservancy. It is intended to extend operations considerably, especially with the view of securing a permanent supply of timber and fuel for the station of Quetta.

Leased Forests.

34. The area of leased forests, which is included under reserves, has been increased from 391 to 402 square miles.

The rent paid during the year, including payments to shareholders in forests managed by Government, is as follows :—

	Rs.
North-Western Provinces (Tehri-Garhwal)	13,498
Punjab (Bashahr, Chamba, Kalesar, Hazara, Kangra) ...	33,155
Berar (annual payment to Melghat Rajas)	17,120
Total ...	63,773

This amount compares as follows with those paid in the preceding four years :—

	Rs.
1877-78	62,814
1878-79	62,174
1879-80	61,931
1880-81	75,341
1881-82	63,773

Cost of Demarcation.

35. The cost of demarcation will be seen from the following data :—

Year.	Area of Reserves at the end of the year, in square miles.	Outlay on Demarcation, &c.
		Rs.
1877-78	17,671	38,380
1878-79	31,602	38,855
1879-80	31,785	45,299
1880-81	33,141	53,002
1881-82	35,242	50,490

As the culminating point in the addition of reserved areas is now past, the expenditure is likely to fall gradually, until it has reached the amount required to keep the boundaries clear and the boundary marks in repair.

Compensation for Land and Rights.

36. The following sums have been expended during the last five years on account of compensation for land and rights :—

	Rs.
1877-78	6,508
1878-79	64,704
1879-80	4,610
1880-81	17,333
1881-82	34,342

About two-thirds of the total amount have been expended in Bengal.

CHAPTER III.—SURVEYS AND WORKING-PLANS.

Surveys.

37. The Forest Survey Branch has during the year under review been employed in the continuation of the survey of the forests in the Central Circle of the North-Western Provinces; detached parties were employed in Berar and in the Tons, Dehra Dun, Saharanpur, and Jaunsar Divisions of the North-Western Provinces.

The area plane-tabled amounted to 239 square miles on the 4-inch scale and 26 square miles on the 2-inch scale, against 260 square miles on the 4-inch scale in 1880-81. The cost per square mile plane-tabled during the year, including office expenditure, is given as Rs. 104, while the corresponding figures for the work in Kumaun and Garhwal were Rs. 118 in 1880-81 and Rs. 111 in 1879-80. The total cost of the Kumaun and Garhwal Survey stands now at Rs. 116 per square mile.

38. The survey of the forests in the Central and School Circles of the North-Western Provinces draws now to a close, and the work turned out may safely be pronounced of excellent quality. It is probable that the Survey Branch will next be employed in Berar, on the survey of the Melghat forests.

In Burma it has been arranged to survey the reserves in connection with the general topographical survey which is now in progress in that province.

Working-Plans.

39. The Working-Plan Branch was during the year 1881-82 employed in the Naini Tal, Ranikhet, and Nandaur forests. The work extended over 34,371 acres, on which 1,550,304 trees were measured and classified. The description of blocks extended over 65,993 acres. Working-plans based on these data are now under preparation.

40. Hitherto this branch of the service was a provincial establishment. A Superintendent of Working-Plans has, however, now been sanctioned, and, beginning from the 1st April 1884, the branch will be Imperial. It is proposed to establish a central office, in connection with that of the Inspector General of Forests, where copies of all working-plans will be deposited, and where a check will be established to secure that the working of the forests is in accordance with the provisions of the working-plans. The Superintendent will visit the several provinces and set on foot provincial branches, whose duty it will be to carry out the actual work in the province concerned, under the orders of the Conservator, in accordance with general principles. In this way, a branch is already in existence in the North-Western Provinces, and a second branch established lately in Burma, will be brought into connection with the head-office. Eventually there should be a branch in each province.

41. The practice of drawing up annual plans of operations is now becoming universal, and with it a decided step in advance has been made; but complete continuity of work cannot be secured until working-plans have been prepared at any rate for all the more important forests.

CHAPTER IV.—PROTECTION AND IMPROVEMENT.

1.—General Protection.

42. The number of prosecutions for breaches of the forest law may be seen from the following statement:—

Provinces.	Number of Persons			Percentage of Acquittals to Prosecutions.
	Prosecuted.	Convicted or undertrial.	Acquitted.	
Bengal	230	200	30	13
North-Western Provinces and Oudh	1,024	876	148	14
Punjab	1,866	1,280	586	31
Central Provinces	1,242	1,079	163	13
British Burma	142	104	38	27
Coorg	73	31	42	58
Ajmere	283	238	45	16
Assam	89	48	41	46
Total ...	4,949	3,856	1,093	22
Berar	669	538	131	20
Biluchistan	10	6	4	40
Grand Total ...	5,628	4,400	1,228	22

The totals compare as follow with those of the previous four years:—

Year.	Number of Persons			Percentage of Acquittals to Prosecutions.
	Prosecuted.	Convicted or under trial.	Acquitted.	
1877-78	4,527	3,158	1,369	30
1878-79	4,435	3,458	977	22
1879-80	6,724	5,311	1,413	21
1880-81	6,467	4,593	1,874	29
1881-82	5,628	4,400	1,228	22
Average ...	5,556	4,184	1,372	25

These data show that, on the whole, the number of prosecutions is exceedingly small, and that it has fallen since 1879-80. The latter phenomenon is, however, explained by the fact that now a certain number of cases are compounded every year which do not appear in these statements. It is desirable that their numbers should be given in the provincial Reports. The percentage of acquittals to prosecutions varies considerably, from 13 per cent. in Bengal and the Central Provinces to 58 per cent. in Coorg, while the average is 22 per cent. in 1881-82, and 25 per cent. if calculated for the last five years. There are satisfactory signs from all parts of the country that the protection of the forests is steadily improving, and that the difficulties which were at first encountered in some parts are disappearing.

2.—Protection from Fire.

43. The results of fire protection on the areas under special protection during the year 1881-82 may be seen from the following table :—

Province.	Area, in square miles.		Percentage of failures to area attempted.	Cost, in Rupees.		Year when fire conservancy commenced.
	Attempted.	Actually protected.		Total.	Per square mile protected.	
Bengal	970	907	6	14,760	16	1872
North-Western Provinces and Oudh.	908	821	10	33,123	40	1872
Punjab	11	11	.....	551	50	1881
Central Provinces ...	1,413	1,209	14	13,750	11	1864
British Burma ...	181	178	2	11,357	64	1857
Coorg	192	73	62	1,417	19	1876
Ajmere	122	122	.....	639	5	1874
Assam	164	98	40	6,144	63	1873
Total ...	3,961	3,419	14	81,741	24	.....
Berar	936	864	8	4,671	5	1870
Grand Total ...	4,897	4,283	13	86,412	20	.....

The total results during the last five years were as follow :—

Year.	Area, in square miles.		Percentage of failures to area attempted.
	Attempted.	Actually protected.	
1877-78	3,243	2,723	16
1878-79	3,474	2,938	15
1879-80	4,072	3,709	9
1880-81	4,465	4,194	6
1881-82	4,897	4,283	13
Average ...	.....	.....	12

Owing to an unfavourable season, fire protection has not been so successful during the year under review as during the previous two years. In the Punjab special measures have only just been introduced, and the figures for Bengal are comparatively valueless, because areas have been included for which no special measures have been taken. The failures were most numerous in 1881-82 in Coorg and Assam, while success was greatest in Ajmere and British Burma. The cost of fire protection is smallest in Ajmere, Berar, and the Central Provinces, and it is highest in British Burma and Assam.

44. On the whole, the results are not quite as satisfactory as could be desired. According to the data for the last five years, each acre of forest under protection would on an average be overrun by fire once every eight or nine years, and although all the good done will not be undone again, still the accomplishment of the objects aimed at will be considerably delayed. It is true that areas can be stocked even if they are periodically overrun by fires, but it is obvious that the expenditure on account of protection must be much larger, and the time required very much longer. Moreover, even periodical fires will considerably reduce the quality of the material produced. On the whole, therefore, special efforts should be made to attain success by taking all possible precautions. In Bengal, for instance, the fire lines were in many instances not of sufficient breadth, and the staff did not in all cases come up to the required standard. From the Central Circle, in the North-Western Provinces, it is reported that 12,452 acres, out of 17,221 acres burnt, might have been saved by greater care on the part of the establishment. In British Burma 347 acres of plantations were burnt. From Assam it is reported that the causes of the fires were the inexperience of a new Divisional Officer in

the management of the Assam people, and mischief. From Berar it is reported that in six cases fires were caused by the carelessness of the establishment employed on line-burning.

Accidents are of course likely to happen under any circumstances, but it is essential that the chance of their occurring should be reduced to a minimum, and it is evident that it has not yet been possible to do this. Above all, the work must be systematically and carefully arranged, and only the most trustworthy members of the staff employed on it.

45. *It has been repeatedly proposed to raise belts of evergreen trees along the boundaries*, which would prevent fires running into the protected areas. This is no doubt a good idea, which should be carried out wherever evergreen trees will grow; but this is unfortunately not always the case. It is not, however, essential that the trees should be evergreen. Any trees grown close together along the boundary will help to keep the growth of grass down, and every effort should be made to stock the areas along the boundaries as rapidly as possible with any trees that will grow, and if these are evergreen so much the better.

3.—Plantations.

General.

46. The following statement exhibits the areas planted up to date and the expenditure incurred on them :—

Province.	Area, in acres.				Expenditure, in Rupees.		
	At the commencement of the year.	Added during the year.	Excluded during the year.	At the close of the year.	During the year.	Total.	Per acre.
Bengal	1,207	798	...	2,005	15,410	1,13,865	57
North-Western Provinces and Oudh ...	2,811	519	...	3,330	8,620	51,834	16
Punjab	17,127	...	926	16,201	24,783	6,77,176	42
Central Provinces	...	...	...	...	...	...	...
British Burma	7,131	872	...	8,003	12,151	3,61,327	45
Coorg	328	109	...	437	6,072	48,715	111
Ajmere	410	3	...	413	4,244	41,037	99
Assam	1,107	44	...	1,151	17,728	89,749	78
Total ...	30,121	2,345	926	31,540	89,008	13,80,003	44
Berar	1,409	...	...	1,409	281	33,496	24
Biluchistan	...	13	...	13	327	327	25
Grand Total ...	31,530	2,358	926	32,962	89,616	14,13,826	43

As many of the plantations have already yielded considerable returns, it is obvious that the information regarding the cost is of comparatively little use, and it is hoped that future Reports will show both receipts and charges.

Bengal.

47. The planted areas are classified as—

	Area, in acres.	Cost, in Rupees.	
		Total.	Per acre.
Regular plantations	1,215	1,00,185	82
Other cultural operations	790	13,680	17
Total ...	2,005	1,13,865	57

The regular plantations are again classified as—

	Acres.
Plantations of hill trees (Darjeeling)	485
Do. do. teak, tun, &c. (Kurseong, Chittagong) ...	705
Other plantations	25
Total ...	1,215

The plantations of hill trees in the Darjeeling District are the result of operations carried on to re-stock the areas cleared for the market, and this work will probably have to be continued, as the small extent of the area available for the supply of Darjeeling makes it extremely doubtful whether the system of natural reproduction, except as an accessory to planting, can be relied on. Natural reproduction, being according to present experience uncertain in those hills, requires more time than artificial reproduction, and it should be the special aim of the Department to re-stock at once the blocks cleared, so as to derive from the available area the highest possible yield of timber and fire-wood.

The teak plantations are experiments made with the object of introducing that valuable tree into Bengal, and they were commenced in 1868. It is not intended to extend materially those in the Kurseong Terai, as the area so far stocked is sufficient to test the suitableness of the locality and of the climate. In Chittagong, on the other hand, which is, as far as latitude goes, within the natural limits of teak, it is intended to proceed with the planting of teak mixed with indigenous species.

The other cultural operations consist of plantings and sowings in the Kurseong and Buxa Divisions, chiefly with the view of stocking savannas along the boundaries of the sâl forests. The results are not yet quite satisfactory, but the work is of great importance, and it should be steadily continued.

North-Western Provinces and Oudh.

48. The planting operations are distributed in the following manner amongst the three Circles :—

Circle.	Area, in acres.			Cost, in Rupees.	
	At the beginning of the year.	Added.	At the end of the year.	Total.	Per acre.
Central	1,047	131	1,178	21,961	19
Oudh	563	228	791	9,459	12
School	1,201	160	1,361	20,414	15
Total ...	2,811	519	3,330	51,834	16

The plantations are situated partly in the hills and partly in the plains, and they are stocked with deodar, other conifers, oaks, walnut, sâl, sissu, khair, tun, other trees and bamboos; but it cannot be ascertained from the Reports what parts of the area are stocked with each of these species.

Punjab.

49. The plantations are classified as follow :—

	Area planted, in acres.			Outlay, in rupees.	
	At the beginning of the year.	Added or excluded.	Total.	Total.	Per acre.
Regular plantations	15,428	+20	15,448	5,70,723	37
Rakh improvement	1,699	—946	753	1,06,453	141
Total ...	17,127	—926	16,201	6,77,176	42

The decrease in the area is due to the exclusion of unstocked areas.

The following operations may be specially mentioned :—

At Subathu, the sowing of 20 acres with chil.
In the Pabbi reserve, the re-sowing of 200 acres.
At Kalatop, the planting out of 6,425 deodar seedlings.
In Kulu, the sowing and planting of 90 acres with deodar.
In Bashahr, the sowing of 206 acres with deodar.
In Kot Lakhpat, the re-sowing of 140 acres with jhand, reru, and ber.

50. The object of planting at the Military Cantonment of Subathu is to secure a supply of timber and fuel for that station.

The work in the Pabbi reserve has been mentioned in previous Reviews. The reserve is situated on dry hills intersected by ravines and torrents. In 1877-78 an area of about 1,300 acres was fenced, all natural growth protected, and various trees, especially *Dodonæa viscosa* and *Acacia modesta*, planted in plots; at the same time the worst ravines were treated with fascines, dams, and dykes, and the silt belts formed above them were sown and planted. The results were at first encouraging, but subsequently, it appears, cattle got in and the damage done to the works was not repaired, so that there was hardly anything to show in 1881. Accordingly a fresh start was made during the year under review on a smaller area, 200 acres. The dams and dykes were systematically repaired and additional ones constructed, seed was largely sown in a variety of ways, and, as a matter of course, steps were taken to exclude cattle absolutely. The results are described as fairly successful, but there can be no doubt that success is not easy to obtain owing to the small and uncertain rainfall.

In Kalatop over 100,000 deodar trees have now been planted, and the results are described as very satisfactory.

The sowings and plantings in Kulu and Bashahr were made to augment natural reproduction, especially to fill up blanks. Those in Kulu are described as very successful.

At Changa Manga blanks were filled up to a considerable extent. That plantation is now being worked regularly, and it yields a considerable revenue every year.

Central Provinces.

51. Although no areas have been entered in the statement given in paragraph 46, a considerable amount of planting has been done. No doubt reproduction is attained chiefly by protection, and planting and sowing are only resorted to in exceptional cases to supply special demands and to improve the composition of the forests; but it appears worthy of consideration whether the success of fire-protection would not in many instances be increased by planting up areas now covered with grass at or near the boundaries, or in the middle, of the protected blocks, where a sufficient number of seed-bearing trees is not available. If in these cases the re-stocking is left to nature, very long periods must ordinarily elapse before any appreciable good can be effected, and the planting of strips or plots with suitable trees appears a measure which might well be considered by the Department.

British Burma.

52. The plantations are classified as follow :—

	Area planted, in acres.			Outlay, in Rupees.	
	At the beginning of the year.	Added during the year.	Total.	Total.	Per acre.
Regular plantations	3,544	20	3,564	3,18,411	89
Toungya do.	3,587	852	4,439	39,216	9
Total ...	7,131	872	8,003	3,57,627	45

The system of plantations carried on by departmental agency has now been abandoned for the system of toungya teak cultivation. The average number of teak seedlings growing in the new teak toungyas at the close of the year amounted to more than 600 per acre, which, with other trees likely to spring up gradually, is a sufficiently dense stocking of the ground. The expenditure incurred on these plantations is very low, and the results are certainly very satisfactory.

53. The Conservator of Forests of the Pegu Circle took advantage of the flowering of bamboos, and planted, at an average cost of Rs. 5 per acre, an area of 450 acres in the Bwet and Nyanleh reserves, on which the dead bamboos had been burnt.

Experimental cutch plantations have been made in the Bawbin and Bwet reserves, and it may be practicable to extend the toungya system to them. The first step, however, must be the formation of cutch reserves.

Assam.

54. The cultural operations are shown in the following statement :—

	Area planted, in acres.			Cost, in Rupees.	
	In previous years.	Added during the year.	Total.	Total.	Per acre.
Regular plantations	1,093	20	1,113	87,012	78
Other cultural operations ...	14	24	38	2,737	72
Total ...	1,107	44	1,151	89,749	78

As regards species, the area is distributed as follows :—

	Acres.
Caoutchouc plantations	912
Teak do.	170
Other do.	31
Sowings of Nahor and Ajhar	38
Total ...	1,151

55. With the exception of the caoutchouc plantations, the operations are as yet in the experimental stage. There is very little difference between the cost of regular plantations and the more rough system of cultivating nahor and ajhar in the Nambor forest, which circumstance requires investigation. The area planted with teak has been extended by 20 acres, but no extension of the caoutchouc plantations has been made during the year, owing to the plants being now kept in the nurseries until they are 10 feet in height. At the close of the year the nurseries in the Charduar reserve contained 176,249 caoutchouc seedlings ranging from a few inches up to 10 feet in height.

4.—Communications and Buildings.

56. The following table shows the outlay under this head during the year :—

Province.	Communications and Buildings.—A VII			
	Roads and Bridges.	Buildings.	Other works.	Total.
	Rs.	Rs.	Rs.	Rs.
Bengal	25,986	6,805	3	32,794
North-Western Provinces and Oudh	41,499	45,561	3,855	90,915
Punjab	5,465	4,764	66	10,295
Central Provinces	849	2,409	1,889	5,147
British Burma	1,106	13,154	2,519	16,779
Coorg	353	437	2	792
Assam	4,715	14,803	84	19,602
Ajmere	.....	121	.....	121
Surveys	.....	.....	.....	.....
Total ...	79,973	88,054	8,418	1,76,445
Berar	9,771	1,533	278	11,582
Grand Total ...	89,744	89,587	8,696	1,88,027

The totals compare with those of the previous four years as follow :—

	Rs.
1877-78	1,11,779
1878-79	1,21,822
1879-80	1,06,193
1880-81	1,38,324
1881-82	1,88,027
Average per annum ...	1,45,229

57. Nearly one-half of the expenditure of 1881-82 was incurred in the North-Western Provinces and Oudh, in the construction of 188 miles of new forest roads and of a number of rest-houses. The main building of the Forest School at Dehra Dun has now been completed, but the construction of students' quarters has not yet been commenced.

On the whole, the opening out of the forests and the construction of rest-houses for the convenience of the staff continue to receive attention. Both are important subjects, which help to secure the financial and general success of the operations of the Department.

5.—Summary of Expenditure on Demarcation and Improvement of the Forests.

58. The expenditure under these heads will be found in the subjoined table :—

Province.	Communications and Buildings—A VII., in Rupees.	Demarcation and Improvement of Forests—A VIII., in Rupees.							Grand Total, in Rupees.
		Demarcation.	Compensation for land and rights.	Surveys and working-plans.	Plantations.	Protection from fire.	Other works.	Total.	
Bengal ...	32,794	6,857	15,361	174	15,410	11,385	572	49,759	82,553
North-Western Provinces and Oudh ...	90,915	9,416	10,337	3,376	8,797	31,023	8,728	71,677	1,62,592
Punjab ...	10,295	10,185	1,734	93	24,784	706	1,748	39,250	49,545
Central Provinces	5,147	871	...	966	4,662	13,307	3,883	23,689	28,836
British Burma	16,779	12,835	2,642	8,886	19,747	10,824	5,999	60,933	77,712
Coorg ...	792	869	47	753	6,072	1,261	...	9,002	9,794
Assam ...	19,602	7,462	185	4,729	16,032	6,500	8,090	42,998	62,600
Ajmere ...	121	8	...	...	4,244	606	270	5,128	5,249
Surveys ...	...	...	...	6,092	...	...	...	6,092	6,092
Total ...	1,76,445	48,503	30,306	25,069	99,748	75,612	29,290	3,08,528	4,84,973
Berar ...	11,582	1,987	4,036	1,967	359	4,570	1,002	13,921	25,503
Grand Total ...	1,88,027	50,490	34,342	27,036	1,00,107	80,182	30,292	3,22,449	5,10,476

The totals compare as follow with those of the previous four years :—

Year.	Communications and Buildings.	Demarcation and Improvement.	Total.
	Rs.	Rs.	Rs.
1877-78	1,11,779	2,42,962	3,54,741
1878-79	1,21,823	2,98,962	4,20,784
1879-80	1,66,193	2,55,647	4,21,840
1880-81	1,88,324	2,66,925	4,05,249
1881-82	1,88,027	3,22,449	5,10,476
Average per annum ...	1,45,229	2,77,389	4,22,618

CHAPTER V.—YIELD AND FINANCIAL RESULTS.

General.

59. Statement I appended to this Review shows the Receipts and Charges of the Department in the provinces immediately under the Government of India; Statement II gives the same data arranged under the main heads of Receipts and Charges; and Statement III exhibits the financial results of the Forest Department throughout India, including Madras and Bombay.

60. The following abstract shows the Receipts and Surplus of the various provinces arranged according to the total amount of Revenue :—

Province.	Total Revenue.	Surplus.	Deficit.	Proportion of Surplus to gross Revenue, in per cent.
	Rs.	Rs.	Rs.	
British Burma	22,31,803	10,81,581	...	48
Bombay	18,28,089	6,79,631	...	37
Central Provinces	11,72,884	6,75,871	...	58
North-Western Provinces and Oudh	10,66,094	1,49,882	...	14
Punjab	6,88,308	1,72,038	...	25
Bengal	6,33,734	2,39,125	...	38
Madras	5,06,710	1,15,524	...	23
Berar	2,33,511	80,526	...	34
Assam	1,66,053	692	...	0·4
Coorg	1,00,364	40,506	...	40
Biluchistan	18,617	936	...	5
Ajmere	4,006	...	9,888	...
Forest Survey	...	...	42,489	...
Total ...	86,50,233	31,83,935	...	37

It will be noticed that Burma stands first as regards the gross and net revenue, while of the seven great provinces, Madras stands last. As regards the proportion of surplus to gross revenue, the Central Provinces come first of the seven great provinces with 58 per cent., then Burma with 48, Bengal 38, Bombay 37, Punjab 25, and Madras 23, while the North-Western Provinces and Oudh stand last with 14 per cent.

Leaving the Survey Branch out of consideration, Ajmere is the only province which has worked with a deficit, and from which no surplus can be expected for some years to come. Assam has narrowly escaped showing a deficit.

61. The total financial results of the Forest Department in India during the last 19 years, rounded off in lakhs of Rupees, are as follow :—

Year.	Receipts.	Charges.	Surplus.	Proportion of Surplus to Receipts, in per cent.
	In lakhs of Rupees.			
1864-65 to 1868-69 (average per year)	30	22	14	39
1869-70 to 1873-74 (ditto)	55	38	17	31
1874-75 to 1878-79 (ditto)	64	43	21	33
1879-80	68	45	23	34
1880-81	71	46	25	35
1881-82	87	55	32	37
1882-83 (latest figures)	95	60	35	·37

The revenue has risen steadily from 30 lakhs to 95 lakhs during the last 19 years, and one-half of this rise has taken place during the last five years, which seems to indicate that the effect of forest conservancy on the balance sheet of the Department is becoming more pronounced every year.

The surplus has risen in almost exactly the same proportion from 14 lakhs to 35 lakhs, but as much as two-thirds of this increase has occurred during the last five years. This is all the more satisfactory, as a very much larger sum is now spent annually on the formation, protection, and improvement of the forests than was the case in the earlier years of forest conservancy.

62. The surplus revenue, arranged according to Presidencies, and excluding the non-British provinces of Berar and Biluchistan, has been as follows during the last four years :—

Year.	Name of Presidency.			Total.
	Bengal.	Madras.	Bombay.	
	Rs.	Rs.	Rs.	Rs.
1878-79	12,20,982	41,890	1,82,732	14,54,604
1879-80	15,96,541	—15,478	4,68,399	20,49,462
1880-81	18,29,876	1,49,835	4,07,711	23,87,422
1881-82	23,07,318	1,15,524	6,79,631	31,02,473

Bengal.

63. The quantities of timber and fuel removed from the forests by Government agency during the year are as follow, compared with those of previous years:—

Year.	Timber.	Fuel.
	Cubic feet.	Cubic feet.
1878-79	78,082	392,472
1879-80	100,017	333,492
1880-81	110,556	340,249
1881-82	111,428	397,775
Average ...	100,021	365,997

64. The quantities removed by private parties during the year under review are given in various measures, so that a comparison is difficult, but it appears that they were approximately as follow :—

Timber	5,000,000 cubic feet.
Fuel	8,000,000 maunds.

Accordingly the departmental operations extend over about 1-50th part of the timber and about 1-40th part of the fuel extracted.

65. Next to timber and fuel, the most important items are bamboos, canes, grass, and golpatta (leaves of *Phœnix paludosa*), of which the following quantities were removed during the year :—

Bamboos	17,678,870 pieces.
Canes, about	3,800,000 „
Grass, „	5,000,000 bundles.
Golpatta	3,094,052 maunds.

66. The financial results of the year, arranged under the main heads of Receipts and Charges, are as follow :—

	Receipts.	Charges.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
Departmental timber and fuel operations ...	1,88,897	1,56,181	32,716	.....
Other revenue	4,44,837	1,12,160	3,32,677	.....
Formation, improvement, and protection ...	.....	1,26,268	.....	1,26,268
Total ...	6,33,734	3,94,609	2,39,125	.....

Taking into consideration the data given above, it appears that the departmental operations were at least four times as profitable as the disposal of produce to purchasers in the forests.

67. The following table shows the distribution of the receipts and charges amongst reserved, protected, and open forests :—

	Amounts credited and debited to the Forest Department.			Area under the management of the Forest Department.	Revenue per square mile.	
	Receipts.	Charges.	Surplus.		Gross.	Net.
	Rs.	Rs.	Rs.	Square miles.	Rs.	Rs.
Reserved forests	5,50,514	3,71,052	1,79,462	4,236	130	42
Protected forests	19,575	10,069	9,506	1,925	10	5
Open and private forests ...	63,645	13,488	50,157	5,108	12	10
Total ...	6,33,734	3,94,609	2,39,125	11,269	56	21

These data leave no doubt that the formation of reserves has resulted in a great improvement of the receipts from the Government forest estates. In fact, the increase in the receipts has kept pace with that in the area of reserves, as will be seen from the following table :—

Year.	Receipts.	Charges.	Surplus.	Area of Reserves
	Rs.	Rs.	Rs.	Square miles.
1872-73	1,16,751	73,581	43,170	106
1873-74	1,16,633	85,488	31,145	120
1874-75	1,85,933	99,403	86,530	1,467
1875-76	1,98,274	1,39,086	59,188	2,585
1876-77	2,22,401	2,11,689	10,712	3,390
1877-78	4,26,228	2,61,211	1,65,017	3,430
1878-79	4,16,024	3,38,671	77,353	2,967
1879-80	4,49,524	2,75,748	1,73,776	2,945
1880-81	5,61,340	3,35,381	2,25,959	3,411
1881-82	6,33,734	3,94,609	2,39,125	4,236

North-Western Provinces and Oudh.

68. It has not been possible to give the data representing the yield of the forests in a uniform manner for all three Circles. Under these circumstances, it will suffice to recapitulate here a few of the main facts.

The following table exhibits the trees cut by departmental agency, according to selection fellings :—

Circle.	Number of trees cut.			Estimated contents, in cubic feet.
	4' 6" in girth and over.	Under 4' 6" in girth.	Total.	
Central	8,061	18,003	26,064	427,563
Oudh	3,160	...	3,160	146,204
School	2,163	98	2,261	427,715
Total ...	13,384	18,101	31,485	1,001,482

This gives an average of 32 cubic feet per tree all round. As regards species, the trees may be classed as follow :—

Circle.	Sal.	Asna.	Sissu.	Deodar.	Other coniferæ.	Oak.	Box.	Miscellaneous.	Total.
Central ...	2,534	3,253	...	861	3,105	247	330	15,734	26,064
Oudh ...	2,528	101	531	...	...	...	...	...	3,160
School ...	...	...	...	1,289	460	372	98	42	2,261
Total ...	5,062	3,354	531	2,150	3,565	619	428	15,776	31,485

69. Two small shipments of boxwood, comprising in all about 40 tons, were made during the year. The prices realised resulted in so small a surplus that this in itself would not be sufficient to encourage the cultivation of the tree. It is, however, desirable to make further shipments, and to try the market fully, before a definite line of policy with regard to box is decided on.

70. The financial results compare as follow with those of the previous four years :—

Year.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1877-78	12,03,108	7,28,225	4,74,883
1878-79	11,26,755	8,09,977	3,16,778
1879-80	10,39,966	7,16,594	3,23,372
1880-81	9,42,229	6,79,574	2,62,655
1881-82	10,66,094	9,16,212	1,49,882

The deterioration of the financial balance sheet, which has taken place during the last few years, has now reduced the surplus to less than one-third of what it was in 1877-78. The figures for 1881-82 are made up as follow in the several Circles :—

Circle	Receipts.	Charges.	Surplus.	Deficit.	Surplus in 1880-81.
	Rs.	Rs.	Rs.	Rs.	Rs.
Central	5,04,038	3,04,893	1,99,145	...	1,95,170
Oudh	3,11,145	2,24,506	86,639	...	64,944
School	2,50,911	3,86,813	...	1,35,902	2,541
Total ...	10,66,094	9,16,212	1,49,882	...	2,62,655

There was a slight improvement in the Central and Oudh Circles during the year, but in the School Circle the falling-off in the net results amounted to Rs. 1,38,443. This is accounted for by the final adjustment of Messrs. Winton and Braidwood's account with the Department, the total sum paid to that firm on account of the purchase of 165,552 cubic feet of converted timber being given as Rs. 2,00,586. Without this transaction the surplus would have amounted to about 3½ lakhs of rupees.

71. Arranged under the main heads of Receipts and Charges, the financial results present the following aspect:—

Year.	I. Departmental timber operations.			II. Other revenue.			III. Formation, protection, and improvement of forests.
	Receipts.	Charges.	Surplus or Deficit.	Receipts.	Charges.	Surplus.	Charges.
	Rs.	Rs.	Rs.	Rs	Rs.	Rs.	Rs.
1879-80	6,35,714	3,47,201	+2,88,513	4,04,252	1,07,648	2,96,604	2,61,745
1880-81	4,40,358	3,20,292	+1,20,066	5,01,871	1,34,145	3,67,726	2,25,137
1881-82	4,29,730	5,15,975	—86,245	6,36,364	1,61,278	4,75,086	2,38,959
Average of 3 years ...	5,01,934	3,94,489	+1,07,445	5,14,162	1,34,357	3,79,805	2,41,947

Considering that the value of timber and fuel in depôts at the end of 1881-82 appears to have been somewhat greater than in the beginning of 1879-80, the results of the departmental timber operations are not unsatisfactory. It has, however, been recognized in the Central and School Circles that such operations are less profitable than the disposal of the timber to purchasers in the forests. In the School Circle certain departmental works must be continued for purposes of instruction, but, with this exception, there seems to be no objection to reduce departmental timber operations as soon as satisfactory arrangements can be made to sell the material *in situ*.

The financial results of the working of the three hill divisions of Naini Tal, Ranikhet, and Jaunsar are not satisfactory. It would appear either that the expenditure is too high, or that the timber and firewood are sold at too low rates.

72. Regarding the comparative value of departmental working, and the removal of produce by purchasers, the Conservator of Forests, Central Circle, gives the following information:—

Particulars.	Receipts.	Charges.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
I.—Departmental timber operations	1,77,828	1,49,834	27,994	...
II.—Other revenue	3,26,209	64,647	2,61,562	...
III.—Formation, protection, and improvement of the forests...	...	90,412	...	90,412
Total ...	5,04,037	3,04,893	2,89,556	90,412

The quantities of timber and other produce worked out by Government agency compare as follow with those removed by purchasers:—

Description of material.	Removed by Government agency.	Removed by private parties.
Timber ... ... C. ft.	179,125	538,092
Fire-wood and charcoal ... ... Mds.	159,144	168,643
Other items, as bamboos and grazing and fodder grass, &c. ... Rs.	7,294	128,359

Deducting the last two items from the surplus given in the statement preceding the above table, the financial results, as regards the removal of timber and fire-wood, may be represented as follows :—

	Material removed.		Surplus of Receipts over Charges.
	Timber.	Fire-wood.	
	C. ft.	Mds.	Rs.
Government agency	179,125	159,144	20,700
Private enterprise	538,092	168,643	1,33,203

Whilst the amount of timber removed by private enterprise is only three times as much as that sold by Government agency, and the amount of fire-wood and charcoal very nearly the same in either case, the surplus of receipts over charges from private enterprise is very nearly seven times as much as the surplus from Government agency.

Punjab.

73. The departmental timber operations seem to have been conducted on a somewhat larger scale than in the previous year, the figures being as follow :—

	1880-81. Cubic feet.	1881-82. Cubic feet.	Increase. Cubic feet.
Timber received during the year ...	496,676	543,405	46,729
Timber sold during the year ...	476,208	578,940	102,732

On the other hand, the quantity of firewood removed from the forests by purchasers has fallen off by about 3½ millions of cubic feet.

74. The total quantity of material removed from the forests by Government agency, by purchasers, and under free grants is as follows :—

Description of Produce.	1880-81.	1881-82.	Increase.	Decrease.
Trees and poles ... ... No.	56,633	58,507	1,874	...
Fire-wood ... ... C. ft. stacked	5,958,158	2,169,962	...	3,788,196
Charcoal ... ... Mds.	6,497	18,872	12,375	...
Bamboos ... ... Pieces.	685,271	596,377	...	88,894
Coal ... ... Tons.	4,157	4,292	135	...

75. The quantity of timber imported from foreign territory is somewhat smaller than the amount imported during the previous year, the figures being as follow :—

Year.	Logs.	Sleepers.
1880-81	54,282	270,021
1881-82	23,389	307,929
Decrease	30,893	.....
Increase	.....	37,908

76. The financial results compare as follow with those of previous years :—

Year.	Receipts.	Charges.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
1877-78	6,83,710	5,17,166	1,66,544	.....
1878-79	5,00,620	5,23,554	.....	22,934
1879-80	6,49,819	4,80,676	1,69,143	.....
1880-81	6,71,679	4,95,368	1,76,311	.....
1881-82	6,88,308	5,16,270	1,72,038	.....
Average ...	6,38,827	5,06,607	1,32,220	.....

Owing to the expenditure having risen more than the receipts, there is a slight falling off in the surplus; at the same time the financial results of the past year are more favourable than the average of the last five years.

Central Provinces.

77. The following table shows the financial results of the departmental timber operations during the last five years:—

Year.	Receipts.	Charges.	Surplus or Deficit.
	Rs.	Rs.	Rs.
1877-78 to 1880-81	4,70,742	5,35,878	−65,136
1881-82	3,10,176	1,38,313	+1,71,863
Total ...	7,80,918	6,74,191	+1,06,727

Departmental timber operations are carried on in the Banjar and Ahiri reserves. Both forests are situated at considerable distances from the markets; moreover, part of the material removed of late years consisted of old timber found lying in the forests, while another part of the material was bought from private owners for conversion, in order to keep the Allapilli saw-mill fully employed. All the timber felled in the Government forests was removed more for the purpose of encouraging the growth of young teak than with the view of any great profit. Under these circumstances, the results are not unsatisfactory. Material which would otherwise not have been brought to market has been made use of, and at the same time a small surplus was realized, which is due to the economical way in which the operations have been conducted. When the rivers used for floating timber have been opened out and roads constructed, the net revenue derived from these forests will no doubt considerably increase.

78. The financial results, arranged according to first and second class reserves, are as follow:—

	Receipts.	Surplus.	Area, in square miles.	Revenue per square mile.	
				Gross.	Net.
	Rs.	Rs.		Rs.	Rs.
First class reserves	4,15,679	1,60,149	2,588	161	62
Second ditto	7,57,205	5,15,722	16,842	45	31
Total ...	11,72,884	6,75,871	19,430	60	35

It will be noticed that the first class reserves yielded double the net revenue per square mile of the second class reserves.

79. On the whole, the receipts have steadily risen for years past, and of late the first class reserves have considerably contributed towards this end. The following is an abstract of the financial results for the last 12 years, arranged in periods of three years:—

Year.	Receipts.	Surplus.	Proportion of Surplus to Receipts, in per cent.
	Rs.	Rs.	Rs.
1870-71 to 1872-73, average per year	5,29,186	2,66,869	50
1873-74 to 1875-76 ditto	6,54,827	3,35,641	51
1876-77 to 1878-79 ditto	7,32,099	3,99,355	55
1879-80 to 1881-82 ditto	10,09,915	5,04,882	50

It is satisfactory to notice that the proportion between surplus and receipts has not fallen off.

British Burma.

80. The following trees were girdled during the year:—

Teak trees	...	18,850
Other trees	...	5,359
Total	...	24,209

Only 200 teak trees were girdled in the reserves, the remainder being obtained from the unreserved forests. It is reported that about 30,000 teak trees fit for girdling remain in the unreserved forests, so that all girdling operations will have to be carried on in the reserves at the end of two years.

81. As far as it has been possible to combine the figures of the two Circles, the following data represent the outturn of the year:—

	Timber extracted, in tons.		
	Teak.	Other timber.	Total.
By Government agency	29,615	20,902	50,517
Under trade permits	...	23,277	23,277
Do. free permits	...	42,413	42,413
In other ways	1,631	579	2,210
Total	31,246	87,171	118,417

The outturn of teak has risen from 22,253 tons in 1880-81 to 31,246 tons in 1881-82, and the quantity of timber of other kinds is nearly double that brought to market in the previous year.

On the other hand, 176,000 cutch trees *(Acacia Catechu)* were cut during the year, as against 436,500 cut in the year 1880-81. This great falling-off is said to be due to the supply outside the reserves being nearly exhausted; but it is possible that the raising of the fee from Rs. 10 to Rs. 20 per cauldron may have influenced the manufacture of the article. Under any circumstances, it seems clear that the stock of cutch trees available is not sufficient to maintain the outturn of the last few years, and a reduction in the quantity of cutch brought to market seems unavoidable, until protection and reproduction have replaced the trees lately removed from the forests. Steps should, therefore, be taken, without delay, to constitute a sufficient area of cutch reserves.

82. The trade in teak in the province during the last four years is exhibited in the following statement:—

Year.	In tons of 50 cubic feet.			
	Yield of Government forests in British Burma.	Imports from Foreign territory.	Total.	Export from Rangoon and Moulmein to Indian and other ports.
1878-79	22,763	170,610	193,373	133,820
1879-80	17,585	157,260	174,845	121,161
1880-81	22,253	124,618	146,871	151,274
1881-82	31,246	154,290	185,536	133,751
Average per year ...	23,462	151,694	175,156	135,001

All these figures exhibit a good deal of fluctuation, which is caused by the state of the market, more or less favourable floods in the rivers, and the

number of trees girdled in previous years. During the last four years the British forests yielded 13 per cent. of the total quantity of teak brought into the market, and the forests beyond the frontier 87 per cent. Of the total out-turn, 23 per cent. were consumed in Burma, while 77 per cent. were exported to India and to other countries.

83. The timber merchants of Moulmein having represented that the duty levied at Moulmein on foreign timber put them at a disadvantage as compared with the timber merchants of Rangoon, and that the principle of levying it is indefensible, the duty was reduced from 7 per cent. *ad valorem* to 1 per cent., and it has since the close of the year been further reduced to ½ per cent., which amount is considered sufficient to cover the expenses imposed on Government by the control of the timber in transit. A few months' experience seems to have shown that the benefit of these reductions is appropriated by the owners of the timber in the Foreign States, while the merchants of Moulmein have failed to realize the advantage expected from the reduction.

84. The revenue of the year, amounting to the handsome sum of Rs. 22,31,803, is considerably larger than that realized in any previous year. The following table shows the financial progress during the last 10 years :—

Year.	Receipts.	Surplus.	Proportion of Surplus to Receipts, in per cent.
	Rs.	Rs.	
1872-73	8,27,469	4,91,445	59
1873-74	10,68,621	5,94,090	56
1874-75	10,74,802	4,12,164	38
1875-76	17,79,020	9,64,270	54
1876-77	15,51,468	5,46,424	35
1877-78	16,03,023	7,47,207	47
1878-79	11,37,562	4,19,161	37
1879-80	11,80,190	4,26,700	36
1880-81	15,16,613	8,04,045	53
1881-82	22,31,803	10,81,581	48

As the revenue depends to a considerable extent on the state of the export trade, it stands to reason that the receipts must fluctuate from year to year. At present the price of teak is very high, and the receipts in 1882-83 are reported to exceed even those of 1881-82, although the reduction of the import duty has caused a loss of about 2½ lakhs of Rupees; but it must not be expected that the receipts will maintain their present height. On the whole, however, the revenue is decidedly rising, and the Burma forests are without doubt the most valuable in India.

Coorg.

85. The working of the Ghat forests is not in a satisfactory condition. After the failure of the license system, the plan of working the forests through a contractor was tried, but this plan failed also. It is now proposed to work them departmentally, but whether this method will be financially successful remains to be seen.

86. The financial results of the last five years are as follow :—

	Receipts.	Surplus.
	Rs.	Rs.
1877-78 to 1880-81, average per year ..	... 85,669	39,983
1881-82	... 1,00,364	40,506

The receipts are higher than the average of the previous four years, but the surplus is about the same, which is not altogether satisfactory.

87. The quantity of sandalwood sold during the last four years and the prices realized are as follow :—

Year.	Tons.	Amount realized.	
		Total.	Per ton.
		Rs.	Rs.
1878-79	33¼	14,346	425
1879-80	101	35,890	355
1880-81	112½	34,324	305
1881-82	60¼	14,054	231
Average per year ...	77	24,653	320

It has not been satisfactorily explained whether the gradually falling prices are due to combination among the purchasers, or to the flooded state of the market. It is proposed to sell the wood in future at a suitable station in Mysore, so as to obtain the benefit of a wider competition.

Assam.

88. The departmental timber operations have been reduced during the year, only 378 trees having been cut, against 599 in the previous year. The number of trees sold standing to private purchasers has, on the other hand, increased from 4,411 to 6,112, besides 4,377 trees which were made over free of charge to the Assam Railway and Trading Company. Upwards of 23,000 maunds of charcoal have been removed from the Government forests, and it seems likely that the demand for this article will largely increase as the forests on the tea plantations are reduced.

89. The financial results of the last three years are as follow :—

Year.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1879-80	1,64,336	1,32,830	31,506
1880-81	1,68,997	1,42,725	26,272
1881-82	1,66,053	1,65,361	692

While the receipts have been stationary, the charges have risen steadily, until they now equal the receipts. The unsatisfactory state of the tea industry has affected the revenue unfavourably, and no large surplus can be expected from the Assam forests for some years to come.

Berar.

90. The financial results of the year compare as follow with those of the previous three years :—

Year.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1878-79	2,85,670	1,07,350	1,78,320
1879-80	3,07,501	1,10,514	1,96,987
1880-81	2,66,556	1,28,969	1,37,587
1881-82	2,33,511	1,52,985	80,526

The surplus has fallen off during the last three years, and it is desirable that the matter should be fully investigated.

Export of Forest Produce.

91. The following statement gives some indication of the quantities of forest produce exported from India during the year :—

Articles.	Quantity in tons of 20 cwt.; in the case of teak, 50 cubic feet.		Valuations at port of shipment in 1881-82.	
	Average of eleven years, 1870-71 to 1880-81.	In 1881-82.	Total.	Per ton.
			Rs.	Rs.
1. Caoutchouc	544	534	10,88,426	2,038
2 Shell-lac	3,024	4,324	55,52,413	1,281
3. Lac-dye	459	251	91,958	366
4. Sandalwood, Ebony, and other ornamental woods	.....	(Not known)	4,69,790	(Not known)
5. Cutch and Gambier	13,479	9,944	25,30,840	255
6. Myrabolans	18,179*	19,578	14,44,925	74
7. Teak	53,560	56,377	50,67,917	90
Total ...	.....	.....	1,62,46,269	.....

* Average of six years only.

There has been a fair increase in the export of shell-lac, and a considerable falling-off in that of cutch and gambier. The value of the total exports is almost the same as that of the previous year.

2. "I certify that I consider Mr. *A. B.*, Assistant Conservator of Forests of the 3rd grade [or 2nd grade], fully competent to hold charge of a forest range [or a forest division].

(Signature)

Conservator of Forests,————————."

The Conservator of Forests may grant the second of these certificates as soon as he considers an officer fit to hold charge of a forest range [or a forest division], even although such officer may not have then passed in the vernacular, in the elements of law, or in the land revenue system of the province.

In the case of Assistant Conservators who are natives of India, it will rest with Local Governments to lay down rules regarding the qualification in languages to be required for their promotion to the 1st and 2nd grades of Assistant Conservators, in lieu of those laid down in this paragraph.

V.—As the numbers in the 2nd and 3rd grades of Assistant Conservators are not fixed, officers may be promoted substantively from the 3rd to the 2nd grade on qualifying, irrespective of the numbers in each of the two grades, but no officiating promotions will be made to the 2nd grade of Assistant Conservators. Promotions beyond the 2nd grade of Assistant Conservators will be regulated by vacancies.

VI.—Promotions from the 3rd grade of Assistant Conservators up to and including the 2nd grade of Deputy Conservators, whether permanent or temporary, will be made by Local Governments. In the case of officers on the Bengal-Assam List, such promotions will be made by the Lieutenant-Governor of Bengal in consultation with the Chief Commissioner of Assam. Similar promotions on the Central Provinces-Berar List will be made by the Chief Commissioner of the Central Provinces in consultation with the Resident at Hyderabad. Should any difference of opinion arise as to the promotions to be made, the case should be reported for the decision of the Government of India.

VII.—Promotions from the 2nd grade to the 1st grade of Deputy Conservators, the appointment and promotion of Conservators, and the appointment or promotion of the six special officers, whether permanent or temporary, will be made by the Government of India.

To enable the Government of India to select officers for promotion in these cases, Local Governments should submit, immediately after the Annual Progress Report of the Forest Department has been reviewed by them, the names of any officers whom they may consider deserving of advancement.

VIII.—In the absence of properly qualified officers in the higher grades, junior officers will be eligible for promotion. Promotion will not be given, and cannot under any circumstances be claimed, on grounds of seniority alone.

IX.—An officer officiating in a class divided into grades will officiate in, and be entitled to the pay of, the lowest of such grades, unless it be otherwise specially ordered with the sanction of the Government of India.

An officer officiating in a grade of the same class as, and immediately above, his own, is entitled to the pay of that grade.

X.—An officiating officer in any case not provided for by Rule IX will be entitled to an acting allowance of one-fifth of the pay of the grade in which he officiates, or to such other allowance as may be specially fixed by the Government of India.

XI.—In cases of misconduct, Local Governments may reduce Deputy Conservators to the class of Assistants, and Assistants or Deputy Conservators to a lower grade in the same class. The reduction of Conservators and of officers holding any of the six special appointments to a lower grade or class, and the removal of Conservators and Deputy or Assistant Conservators from the staff, will rest with the Government of India.

XII.—When an officer is reduced to a lower class or grade, his name will, as a rule, be placed at the bottom of the list of officers of that grade; but should the Local Government, under whom the officer is serving, desire in any special case that the officer degraded be placed in any other position in the lower grade, the fact should be stated in the order reducing the officer.

XIII.—The Government of India alone has the power of accepting the resignation of a Conservator or of a Deputy or Assistant Conservator.

XIV.—Transfers from one province to another will only be made in exceptional cases, but the Government of India reserves to itself the right of transferring officers from one province to another for the benefit of the public service, or on grounds of health. When an officer is transferred from one province to another at his own request, such transfer will ordinarily carry with it the condition that his name shall be placed in the list of his new province at the bottom of the grade or class to which he belongs.

XV.—Postings and transfers of officers within a province will be made by Local Governments.

XVI.—Leave of absence may be granted by Local Governments to officers of the Forest Department under the rules applicable to the branch of the service to which such officers

belong. In dealing with applications for leave, Local Governments will, in granting leave, take into consideration the fact that the staff now allotted to each province cannot, as a rule, be augmented by the Government of India in order to provide substitutes for officers on leave.

XVII.—The fact and date of retirement of officers in all grades should be specially reported to the Government of India, and that Government should also be furnished promptly and regularly with copies of all notifications issued by Local Governments which refer to the promotion or reduction of officers, whether permanent or temporary, or to the grant of leave.

APPENDIX II.

Memorandum of conditions for the admission and training of candidates for the appointment of Forest Ranger at the Forest School: dated the 1st December 1881.

1. CANDIDATES for appointment as Forest Rangers, who desire to be received at the Central Forest School, will be selected by Conservators of Forests, acting under such orders as may from time to time be given by the Local Government or Administration under which they are serving. Ordinarily only natives of India will be so admitted.

2. As a rule, no students will be received at the Forest School who have not proved their fitness for Forest work by service in the subordinate staff of the Department, whether permanent or temporary, during a period of not less than twelve months.

3. It will be the duty of the Conservator to satisfy himself that the candidate has a good moral character, active habits, fair powers of observation, and sense of locality, and such other qualifications as are necessary for a Forest Ranger.

4. Candidates for admission to the School must produce the certificate of having passed the Entrance Examination of an Indian University. In the case of both an English and an Oriental side existing at any University, the Entrance Examination must have been passed on the English side. The condition of having passed the Entrance Examination may be dispensed with in the case of candidates now in the Forest service, provided the Director of the Forest School is satisfied that they have attained such a standard of general education as will enable them to follow the course of instruction with advantage.

5. Students must on admission to the School be not less than 18 or more than 25 years of age. Each candidate will be required to furnish a certificate of sound health, good vision, and hearing from the Civil Surgeon of the station nearest to his place of residence.

6. Candidates selected for admission to the School will join at Dehra Dún on the 1st July. The course of training will be partly theoretical and partly practical. The theoretical course will generally extend from the 1st July to the 31st October, while the remaining eight months of the year will be devoted to practical work in the forests. The Forest Ranger's certificate may be granted at the end of sixteen months, which will include two terms of theoretical teaching. But it will rest with the Director to extend the course of instruction by an additional period not exceeding twelve months.

The theoretical course will be gone through at Dehra Dún. The practical instruction will be given either in the Divisions attached to the Forest School, or in the Forest Survey, the Working-Plan Branch, or in selected Divisions of other provinces or circles.

7. While at the Forest School students will receive the same rate of pay which they drew while employed in the subordinate staff of their province, or such other allowance as the Conservator, under the authority of the Local Government, may sanction, the Government of India being informed of the orders passed in each case.

8. During the course of instruction the Director will furnish Conservators of Forests with monthly reports on the application and progress of the students sent by them to the School.

The Director has power to dismiss any student for misconduct; and a student thus dismissed will not be re-admitted to the School. The Director may also remand to his province, or circle, any student who, in his opinion, is not suitable or sufficiently promising.

9. Successful students who at the close of the course of instruction have received a Forest Ranger's certificate will, as a rule, return to, and be employed in, the province or circle from which they were sent to the Forest School. On return to their province or circle, they will be appointed to the class of Forest Ranger, or, in the absence of vacancies, to the higher grades in the class of Forester.

10. After the 1st April 1885 no person who has not obtained the Forest Ranger's certificate at the Forest School, in the manner here prescribed, shall be appointed a Forest Ranger without the special sanction in each case of the Local Government.

11. Forest Rangers, whether they have received the Forest Ranger's certificate or not, but who, in any case, have served for not less than two years as Forest Ranger, may, under such rules and conditions as may be prescribed by Government, be deputed to the Forest School for a course of instruction, with the view of qualifying for promotion to the superior staff. But no Forest Ranger will be admitted to the School who is over 30 years of age.

STATEMENT I.

Summary of the Revenue and Expenditure of the Forest Department in the Provinces immediately under the Government of India for the year 1881-82.

Budget Heads.	Bengal.	North-Western Provinces and Oudh.	Punjab.	Central Provinces.	British Burma.	Coorg.	Assam.	Ajmere.	Surveys.	Total of British Provinces under the Government of India.	Hyderabad Assigned Districts.	Biluchistan.	Grand Total.
Receipts.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
I.—Timber and other produce removed from the forests by Government agency.	1,86,308	4,29,082	3,67,487	3,10,226	15,55,247	37,120	32,836	504	...	29,18,810	3,630	8,818	29,31,258
II.—Ditto ditto by consumers or purchasers ...	4,16,865	6,06,403	2,77,159	8,31.748	1,76,817	28,582	1,22,312	2,072	...	24.61,958	2,26.396	9,774	26,98,128
III.—Confiscated drift and waif wood	3,767	11,585	11,416	4,728	1,58.359	5,500	1,777	9	...	1,97,141	2,150	...	1,99,291
IV.—Revenue from forests not managed by Government ...	.	5,624	11,823	8,463	3,32.877	...	7,651	...	...	3,66,438	...	...	3,66,438
V.—Miscellaneous	26,794	13,400	20,423	17,719	8,503	29,162	1,477	1,481	...	1,18.959	1,335	25	1,20,319
Total Receipts ...	6,33,734	10,66,094	6,88,308	11,72,884	22.31,802	1,00.364	1,66,053	4,066	...	60,63,306	2,33,511	18,617	63,15,434
Expenditure.													
A.—Conservancy and Works.													
I.—Timber and other produce removed from the forests by Government agency.	1,13,252	3,88,434	1,41 308	1,20,392	6,98,190	16,511	4,481	300	...	14,82,868	284	4,972	14,88,124
II.—Ditto ditto by consumers or purchasers ..	31,588	31,682	882	1,53,104	7,700	...	4,606	1	...	2,29.563	18,669	...	2,48,232
III.—Confiscated drift and waif wood	395	860	622	...	67,016	...	144	...	...	69,037	...	...	69,037
IV.—Revenue from forests not managed by Government. ...	...	...	4,174	...	...	...	...	...	...	4,174	...	...	4,174
V.—Rent of leased forests, and payments to shareholders in forests managed by Government.	...	13,498	33,155	2[illegible]		...	...	...	..	46,904	17,120	1,761	65,785
VI.—Live and dead stock	17,042	28,257	4,571	9,628	49,356	3,387	14,012	50	2,730	1,29,033	6,339	89	1,35,461
VII.—Communications and buildings	32,794	90,915	10,295	5,147	16.779	792	19,602	121	..	1,76,445	11,582	638	1,88,665
VIII.—Demarcation, improvement, and extension of forests...	49,759	71,677	39,250	23,689	60,933	9,002	42.958	5,128	6,092	3,08,528	13,921	688	3,23,137
IX.—Miscellaneous	962	14,702	762	5,532	9,000	2,614	3,038	31	48	36,689	2,614	6	39,309
Total Conservancy and Works ...	2,45,792	6,40,025	2,35,019	3,17,743	9,08,974	32,306	88,881	5,631	8,870	24,83,241	70,529	8,154	25,61,924
B.—Establishments.													
I.—Salaries	1,28,986	2,29,454	2,30,959	1,52,186	1,94,711	21,907	61,728	7,024	26.614	10,53,569	68.697	7,415	11,29,681
II.—Travelling allowances	13,773	33,311	35,631	15,449	33,874	4,858	11,115	891	5,160	1,54,062	7,153	2,022	1,63,237
III.—Contingencies	6,058	13,422	14,661	11,635	12,663	787	3.637	408	1,845	65,116	6,606	90	71,812
Total Establishments ...	1,48,817	2,76,187	2,81,251	1,79.270	2,41,248	27,552	76,480	8,323	33,619	12,72,747	82,456	9,527	13,64,730
Grand Total of Expenditure ...	3,94,609	9.16,212	5,16,270	4,97,013	11,50,222	59,858	1,65,361	13,954	42,489	37,55,988	1,52,985	17,681	39,26,654
Surplus ...	2.39.125	1,49,882	1,72,038	6,75,871	10,81,581	40,506	692	.	..	23,07,318	80,526	936	23,88,780
Deficit ...	...	...	...	...	..	...	...	9,888	42,489	...	...	...	...

STATEMENT II.

Financial Results of Forest Administration in the Provinces immediately under the Government of India for the year 1881-82.

Province.	Timber and other produce removed from the forests by Government agency.			Other Revenue.			Formation, Protection, and Improvement of Forests.	Total.			
	Receipts.	Charges.	Surplus or Deficit.	Receipts.	Charges.	Surplus.	Charges.	Receipts.	Charges.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	1,88,897	1,56,181	+32,716	4,44,837	1,12,160	3,32,677	1,26,268	6,33,734	3,94,609	2,39,125	...
North-Western Provinces and Oudh	4,29,731	5,15,975	−86,244	6,36,363	1,61,278	4,75,085	2,38,959	10,66,094	9,16,212	1,49,882	...
Punjab	3,78,903	2,71,120	+1,07,783	3,09,405	1,00,710	2,08,695	1,44,440	6,88,308	5,16,270	1,72,038	...
Central Provinces	3,10,176	1,38,313	+1,71,863	8,62,708	2,21,152	6,41,556	1,37,548	11,72,884	4,97,013	6,75,871	...
British Burma	17,15,287	9,44,460	+7,70,827	5,16,516	70,441	4,46,075	1,35,321	22,31,803	11,50,222	10,81,581	...
Coorg	37,120	29,346	+7,774	63,244	7,470	55,774	23,042	1,00,364	59,858	40,506	...
Assam	23,894	9,157	+14,737	1,42,159	36,944	1,05,215	1,19,260	1,66,053	1,65,361	692	...
Ajmere	505	2,406	−1,901	3,561	2,137	1,424	9,411	4,066	13,954	...	9,888
Forest Survey	...	...	...	...	...	...	42,489	...	42,489	...	42,489
Total ...	30,84,513	20,66,958	+10,17,555	29,78,793	7,12,292	22,66,501	9,76,738	60,63,306	37,55,988	23,07,318	...
Berar	3,629	284	+3,345	2,29,882	1,05,629	1,24,253	47,072	2,33,511	1,52,985	80,526	..
Biluchistan	8,817	7,354	+1,463	9,890	4,142	5,658	6,185	18,617	17,681	936	...
Grand Total ...	30,96,959	20,74,596	+10,22,363	32,18,475	8,22,063	23,96,412	10,29,995	63,15,434	39,26,654	23,88,780	...

STATEMENT III.

Receipts and Charges of the Forest Department throughout India during the eighteen years from 1864-65 *to* 1881-82.

RECEIPTS.

Provinces.	1864-65.	1865-66.	1866-67 (11 months).	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	...	38,584	50,555	75,687	2,24,546	1,13,753	1,19,678	1,39,088	1,49,851	1,16,633	1,85,933	1,98,274	2,22,401	4,26,228	4,16,024	4,49,524	5,61,340	6,33,734
North-Western Provinces and Oudh ...	6,93,644	7,70,370	7,79,200	5,77,644	7,85,211	8,33,077	4,25,257	11,70,901	19,89,114	19,32,677	13,63,358	12,64,356	11,50,671	12,03,108	11,26,755	10,39,966	9,42,229	10,66,094
Punjab	2,95,730	2,08,050	2,31,470	2,79,297	3,45,164	3,94,132	10,40,368	7,35,002	6,52,994	7,32,540	8,34,874	9,05,742	5,98,754	6,83,710	5,00,620	6,49,819	6,71,679	6,88,308
Central Provinces	89,307	2,02,644	3,67,095	3,49,491	3,50,536	4,16,020	6,58,120	4,47,764	4,81,673	5,68,367	6,61,779	7,25,335	6,61,326	6,83,910	8,52,862	10,06,723	8,50,139	11,72,884
British Burma	9,36,233	8,98,629	4,24,053	6,47,590	8,16,171	9,84,773	8,18,124	7,72,399	8,27,469	10,68,621	10,74,802	17,79,020	15,51,468	16,03,023	11,37,562	11,80,190	15,16,613	22,31,803
Coorg	1,02,218	1,08,257	31,934	77,746	74,448	1,08,152	74,067	92,453	84,424	1,10,079	58,012	1,07,457	75,929	1,01,015	52,020	1,01,786	87,857	1,00,364
Ajmere	...	.	..	...	..	..	...	..	24	508	209	410	905	3,002	1,241	1,861	1,124	4,066
Assam	...	...	...	...	..	..	..	...	..	62,726	64,749	1,07,302	81,568	1,34,326	1,61,779	1,64,336	1,68,997	1,66,053
Surveys	.	...	..	..	...	...	..	...	..	...	...	..	...	...	63	38	272	..
Total .	21,17,132	22,26,534	18,84,307	20,07,455	25,96,076	28,49,907	31,35,614	33,57,607	41,35,549	45,92,151	42,43,710	50,87,896	43,43,022	48,38,322	42,48,926	45,94,243	48,00,250	60,63,306
Madras	3,11,778	3,26,204	3,38,608	4,24,134	3,91,179	4,95,789	3,39,762	4,18,882	4,18,767	4,64,194	3,64,326	4,26,359	4,15,312	4,04,164	3,83,694	3,65,750	5,01,839	5,06,710
Bombay and Sind	10,70,210	10,07,610	8,21,268	8,84,245	12,13,482	12,35,257	11,77,425	11,50,210	11,46,404	11,88,090	12,23,995	12,48,672	12,26,658	12,61,529	11,81,893	15,24,712	15,22,807	18,28,089
Total Revenue (British India)	34,99,120	35,60,348	30,44,183	33,15,884	42,00,737	45,80,953	46,52,801	49,26,699	57,00,720	62,44,435	58,32,031	67,62,927	59,84,992	65,04,015	58,14,513	64,84,705	68,24,896	83,98,105
Hyderabad Assigned Districts ...	2,368	15,106	43,574	53,446	84,556	1,45,481	1,77,329	1,55,544	2,59,861	2,63,256	2,60,674	2,32,817	2,53,136	2,79,231	2,85,670	3,07,501	2,66,556	2,33,511
Biluchistan ditto ..	.	.	.	...	...	.	..	..	. .	.		...	..	...	...	..	14,376	18,617
GRAND TOTAL OF REVENUE...	35,01,488	35,75,454	30,87,757	33,69,330	42,85,293	47,26,434	48,30,130	50,82,243	59,60,581	65,07,691	60,92,705	69,95,744	62,38,128	67,83,246	61,00,183	67,92,206	71,05,828	86,50,233

STATEMENT III—*continued.*

EXPENDITURE.

A.—On Conservancy and Works.

PROVINCES.	1864-65.	1865-66.	1866-67 (11 months).	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	2,092	19,480	89,326	1,41,382	95,581	61,004	26,272	43,907	28,526	28,552	39,062	68,255	90,172	1,46,857	2,10,914	1,50,295	1,89,619	2,45,792
North-Western Provinces and Oudh ...	3,82,780	2,45,158	2,66,187	2,74,818	3,69,869	3,59,149	5,94,829	8,95,931	9,54,515	9,72,991	8,75,039	5,40,335	6,50,002	5,09,798	5,72,085	4,63,591	4,15,418	6,40,025
Punjab	1,62,120	1,94,110	1,76,950	1,75,920	1,93,516	5,55,375	10,30,005	4,78,008	5,45,068	3,54,457	4,19,305	3,18,498	2,70,330	2,58,949	2,58,952	2,20,827	2,25,277	2,35,019
Central Provinces	35,610	88,504	46,817	1,13,068	1,86,925	3,65,801	1,95,251	1,24,621	1,33,666	1,67,010	1,78,513	2,40,523	1,67,334	1,78,401	2,36,029	3,58,380	3,40,386	3,17,743
British Burma	1,77,158	2,21,739	2,04,591	2,25,049	3,22,981	3,11,404	2,89,445	2,45,514	2,03,929	3,32,391	5,31,841	6,60,515	8,22,064	6,40,062	5,00,783	5,29,692	4,77,866	9,08,974
Coorg	4,688	3,995	4,425	5,354	7,175	22,851	14,822	20,714	18,324	23,001	23,773	25,991	18,493	16,453	14,671	30,542	29,956	32,306
Ajmere	...	...	...	...	...	...	...	...	4,878	15,777	17,753	12,963	11,433	6,961	5,182	5,280	4,755	6,631
Assam	...	...	...	...	...	...	...	...	...	18,901	31,138	33,187	42,005	48,954	64,519	72,157	69,209	88,881
Surveys	..	...	...	...	...	...	...	...	8,303	7,420	3,906	5,134	7,684	16,024	10,663	8,655	7,700	8,870
Total ...	7,64,448	7,22,986	7,88,296	9,35,591	11,76,047	16,75,584	21,50,624	18,08,690	18,97,209	19,20,500	21,20,330	19,05,401	20,79,517	18,16,459	18,73,798	18,39,419	17,60,186	24,83,241
Madras	94,657	1,36,528	1,14,251	1,62,037	1,32,693	1,46,821	1,56,779	1,94,814	3,03,735	1,75,370	2,21,864	2,39,945	1,94,943	1,59,867	1,24,406	1,63,367	1,32,206	1,63,544
Bombay and	3,17,699	5,63,067	4,36,470	3,32,175	3,87,412	3,28,985	3,84,638	3,27,729	4,34,612	4,11,547	5,20,049	4,80,801	5,30,394	5,36,477	6,37,117	6,59,701	6,93,935	7,14,171
TOTAL (BRITISH INDIA) ...	11,76,804	14,22,581	13,39,017	14,29,803	16,96,152	21,51,390	26,92,041	23,31,233	26,35,556	25,07,417	28,62,243	26,26,147	28,04,854	25,12,803	26,35,321	26,62,487	25,86,327	33,60,956
Hyderabad Assigned Districts ...	...	...	...	2,184	6,552	22,018	43,034	62,759	45,062	44,117	45,514	42,287	40,506	49,715	39,544	42,352	57,366	70,529
Biluchistan " " ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6,015	8,154
GRAND TOTAL ...	11,76,804	14,22,581	13,39,017	14,31,987	17,02,704	21,73,408	27,35,075	23,93,992	26,80,618	25,51,534	29,07,757	26,68,434	28,45,360	25,62,518	26,74,865	27,04,839	26,49,698	34,39,639

STATEMENT III—*continued.*

B.—On Establishments.

PROVINCES.	1864-65	1865-66.	1866-67 (11 months).	1867-68.	1868-69	1869-70.	1870-71	1871-72	1872-73	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79	1879-80.	1880-81	1881-82
	Rs.	Rs.	Rs	Rs	Rs	Rs.	Rs.	Rs	Rs	Rs.	Rs	Rs.	Rs.	Rs	Rs	Rs	Rs	Rs
Bengal	6,604	16,292	14,881	24,223	30,676	34,870	60,186	64,429	71,090	56,936	60,341	70,831	1,21,517	1,14,354	1,27,757	1,25,453	1,45,762	1,48,817
North-Western Provinces and Oudh	92,893	1,06,125	1,05,282	1,08,204	1,31,090	1,69,531	1,81,047	2,01,020	2,07,917	1,92,949	1,85,663	1,95,994	2,10,247	2,18,427	2,37,892	2,53,003	2,64,156	2,76,187
Punjab	84,665	77,968	78,680	97,955	1,15,828	1,58,279	2,03,951	2,27,321	2,50,874	2,42,705	2,27,175	2,35,728	2,52,153	2,58,217	2,64,602	2,59,849	2,70,091	2,81,251
Central Provinces	61,946	74,994	81,041	99,031	1,07,730	1,08,445	1,12,182	1,07,059	1,14,171	1,16,546	1,15,726	1,30,240	1,21,306	1,39,277	1,57,686	1,64,193	1,55,127	1,79,270
British Burma	86,081	90,327	80,544	1,03,339	99,191	1,10,055	1,11,293	1,32,935	1,32,095	1,42,140	1,30,797	1,54,235	1,82,980	2,15,754	2,17,618	2,23,788	2,34,702	2,41,248
Coorg	4,201	8,654	7,127	8,610	9,301	10,231	9,777	10,267	11,340	11,708	14,226	11,688	14,836	19,814	20,158	24,622	26,531	27,552
Ajmere	...	..		.	...	.	...	...	8,177	8,563	8,813	14,383	11,025	7,965	8,263	8,470	7,668	8,323
Assam	..	...		.	...	.	..	...	...	31,721	28,385	28,697	47,915	51,333	61,508	60,673	73,516	76,480
Surveys	..	..		...	...	..	...	.	12,875	42,852	57,614	53,859	49,820	49,684	49,662	38,222	32,635	33 619
Total of Establishment Cnarges	3,36,390	3,74,360	3,67,555	4,41,362	4,93,816	5,91,414	6,78,436	7,43,051	8,08,539	8,46,120	8,28,740	8,95,655	10,11,799	10,74,825	11,45,146	11,58,283	12,10,188	12,72,747
TOTAL OF ALL CHARGES	11,00,838	10,97,246	11,55,851	13,76,953	16,69,863	22,66,996	28,29,060	25,51,721	27,05,748	27,66,620	29,49,070	28,01,056	30,91,316	28,91,284	30,18,944	29,97,702	29,70,374	37,55,988
Madras	95,300	1,17,054	1,02,920	1,26,223	1,37,779	1,39,870	1,38,081	1,50,902	1,74,412	1,77,814	1,76,008	1,90,138	2,19,027	2,22,626	2,17,398	2,17,861	2,19,798	2,27,642
Bombay and Sind	2,10,352	2,11,987	2,10,973	2,14,962	2,39,711	2,15,811	2,38,125	2,57,035	2,78,430	2,93,990	2,96,071	2,97,676	3,01,548	3,20,467	3,62,044	3,96,612	4,21,161	[illegible]
Total of Establishment Charges (British India)	6,42,042	7,03,401	6,81,448	7,82,547	8,71,306	9,47,095	10,54,642	11,50,968	12,61,381	13,17,924	13,00,819	13,83,469	15,32,374	16,17,918	17,24,588	17,72,756	18,51,147	19,34,676
TOTAL OF ALL CHARGES (BRITISH INDIA)	18,18,846	21,25,982	20,20,465	22,12,350	25,67,458	30,98,485	37,46,683	34,82,201	38,96,937	38,25,341	41,63,062	40,09,616	43,37,228	41,30,721	43,59,909	44,35,243	44,37,474	52,95,632
Hyderabad Assigned Districts	478	8,991	13,718	16,157	27,553	58,692	38,938	39,071	37,994	41,523	45,875	48,586	54,146	60,253	67,806	68,162	71,613	82,456
Biluchistan „ „	...	..	...	...	.		.	...	..	...	...	...	...	...	.	.	10,401	9,527
GRAND TOTAL OF ESTABLISHMENT CHARGES	6,42,520	7,12,392	6,95,166	7,98,704	8,98,859	10,05,787	10,93,580	11,89,039	12,99,375	13,59,447	13,46,694	14,32,055	15,86,520	16,78,171	17,92,394	18,40,918	19,33,161	20,26,659
GRAND TOTAL OF ALL CHARGES	18,19,324	21,34,973	20,34,183	22,30,691	26,01,563	31,79,195	38,28,655	35,83,031	39,79,993	39,10,981	42,54,451	41,00,489	44,31,880	42,40,689	44,67,259	45,45,757	45,82,859	54,66,298

STATEMENT III—*concluded.*

SURPLUS REVENUE.

PROVINCES	1864-65	1865-66	1866-67 (11 months)	1867-68	1868-69	1869-70	1870-71	1871-72	1872-73	1873-74	1874-75	1875-76	1876-77	1877-78	1878-79	1879-80	1880-81	1881-82
	Rs	Rs	Rs.	Rs	Rs.	Rs	Rs	Rs	Rs	Rs	Rs	Rs	Rs	Rs.	Rs	Rs.	Rs	Rs
British India, excluding Madras and Bombay	10,16,294	11,29,188	7,28,456	6,30,502	9,26,213	5,82,909	3,06,554	8,05,886	14,29,801	18,25,531	12,94,640	22,86,840	12,51,706	19,47,038	12,29,982	15,96,541	18,29,876	23,07,318
The Presidency of Madras	1,21,821	72,625	1,21,437	1,35,924	1,20,707	2,09,098	44,902	73,166	(Deficit 59,380)	1,11,010	(Deficit 33,546)	(Deficit 3,724)	1,342	21,671	41,890	(Deficit 15,478)	1,49,835	1,15,524
Ditto of Bombay	5,42,159	2,32,556	1,73,825	3,37,108	5,86,359	6,90,461	5,54,662	5,65,446	4,33,362	4,82,553	4,07,875	4,70,195	3,94,716	4,04,585	1,82,732	4,68,399	4,07,711	6,79,631
TOTAL NET REVENUE (BRITISH INDIA)	16,80,274	14,34,366	10,23,718	11,03,534	16,33,279	14,82,468	9,06,118	14,44,498	18,03,783	24,19,094	16,68,969	27,53,311	16,47,764	23,73,294	14,54,604	20,49,462	23,87,422	31,02 473
Hyderabad Assigned Districts	1,89[illegible]	6,115	29,856	35,105	50,451	64,771	95,357	54,714	1,76,805	1,77,616	1,69,285	1,41,944	1,58,484	1,69,263	1,78,320	1,96,987	1,37,587	80,526
Biluchistan ditto ...		..	.	..	...	.		...		...	...	.	..				(Deficit 2,040)	936
GRAND TOTAL OF NET REVENUE	16,82,[illegible]64	14,40 481	10,53,574	11,38,639	16,83,730	15,47,239	10,01,475	14,99,212	19,80,588	25,96,710	18,38,254	28,95,255	18,06,248	25,42,557	16 32,924	22,46 449	25,22,969	31,83,935

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REVIEW

OF THE

FOREST ADMINISTRATION

IN

BRITISH INDIA,

FOR THE YEAR

1882-83:

BY

W. SCHLICH, PH. D.,

INSPECTOR-GENERAL OF FORESTS TO THE GOVERNMENT OF INDIA.

SIMLA

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REVIEW

OF THE

FOREST ADMINISTRATION

IN

BRITISH INDIA,

FOR THE YEAR 1882-83:

BY

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INTRODUCTION.

THE most remarkable feature in Indian Forest Administration is the rapid increase of the Revenue. Five years ago it amounted to 68 lakhs of rupees, and now it has risen to 101 lakhs. This proves conclusively an increasing demand on the Government forests, which is chiefly due to the destruction of private forests, brought about by—

(i) the extension of railway communication; and

(ii) the increasing prosperity of the country.

Repeated efforts have been made to ascertain the area of private forests, but the data so far available are very incomplete. In the Central Provinces the private forests amount to about 35,000 square miles, while the Government forests cover an area of close on 20,000 square miles. In Bengal the zamindars hold from 40,000 to 50,000 square miles of forest lands, while the Forest Department manages 11,754 square miles. In other provinces the Government forests exceed the private forests in area; but on the whole it seems that the latter cover a larger area than the former.

2. The private forests have for a number of years past, and, it may be said, since the occupation of India by the British, which event was conterminous with the springing up of an increased demand, been steadily reduced by indiscriminate fellings without any regard to their reproduction. In some cases the object was to clear the ground for cultivation, and in others to satisfy an ever-increasing demand for forest produce. Where railways have been constructed the forests have rapidly disappeared, not only to make room for the march of civilization, but also to supply the large requirements of the lines. Taking into consideration the special impetus which has lately been given to the construction of additional railways, the final destruction of all private forests within a reasonable distance from them may safely be predicted. The result of this change is that the requirements for forest produce, which were formerly chiefly satisfied from private forests, must, in an ever-increasing proportion, be obtained from the Government forests. Hence the rapid increase in the Revenue.

3. This state of affairs imposes additional duties upon the Officers of the Forest Department. As long as the bulk, or, at any rate, a very large proportion, of the ordinary forest produce required per annum could be obtained from private estates, and while the Government forests were in most instances worked below their capability, a simple system of management sufficed to keep the latter estates in a fair condition; but with the increase in the demand on them, and as this approaches their maximum annual yield, the system of management must become more detailed and resources must be more carefully husbanded, or else it may hereafter be found impossible to meet the demand upon the forests.

4. Forest estates are properties requiring special and peculiar treatment, and in this respect they differ widely from land under ordinary cultivation. In the case of forests the produce of a particular year cannot, as a rule, be removed at once, but has generally to be kept for many years before it becomes fit for the special purpose for which it is wanted. The Forest Officer thus becomes trustee of considerable capital, on which he may, by overworking the forest, make inroads for a long period without the fact coming to the knowledge of the Government, or becoming even apparent to himself, unless a careful account is kept of the growing stock, and sales are duly regulated with reference to the capabilities of the forest and its powers of reproduction. As regards the latter point, special care must be taken to effect a restocking of all areas cleared for the market in the shortest time practicable. Where circumstances are favourable, this may be done in the natural way; but under unfavourable circumstances, planting and sowing must be undertaken to augment the efforts of nature, in order to prevent loss of time and a reduction of the possible yield of the forest. All these things demand that a strict control should be exercised over the working of the Government forests, and this can only be done by means of working-plans, which should be prepared, at first, for the more important areas, but eventually for all forests.

5. A working-plan deals with all points connected with the management of a forest, amongst which the following are the most important; it ascertains—

(i) the stock on the ground at a particular time;

(ii) the annual increase of the stock;

(iii) the quantity of material which may be removed annually; and

(iv) it arranges for the proper and immediate restocking of all areas cleared for the supply of the market.

The degree of accuracy required in the collection of the data for a working-plan depends chiefly upon the market value of the produce and the demands made on a particular forest. Where that demand equals, or even exceeds, the possible yield, the work must be done with the greatest minuteness, and everything must be arranged so as to obtain the highest yield which the forest is capable of returning under the most careful management. Where, on the other hand, the demand is as yet below the ordinary capability of the forest, a more rough procedure may be followed. Thus a working-plan for the greater portion of the Assam forests should, for the present, be a very simple and plain document, while those for the Darjeeling, Chakrata, Kalatope, and other similarly situated forests, must be drawn up much more minutely.

6. For years past the preparation of working-plans has been encouraged. Whenever the Inspector-General of Forests has visited a province, he has generally drawn up a scheme for the working of its forests, and a number of special working-plans have also been prepared from time to time either by the Inspector-General himself or by local officers. Then as the working of the forests gradually became more detailed, owing to increased demands, special working-plans divisions were established, first in the North-Western Provinces, after that in British Burma, and lately in the Punjab. Similar divisions are about to be formed in some of the other provinces. In this manner a skilled staff will gradually be created, whose business it is to prepare, in consultation with the local officers, the working-plans for the forests in the different provinces.

7. But something more is required, namely, that the execution of the working-plans, once approved by Government, shall be ensured, and this had best be done by a central agency. For this purpose a Superintendent of Working-Plans has been sanctioned, who will now be appointed Assistant to the Inspector-General of Forests. It will be the duty of the Inspector-General and his Assistant to visit the provinces where working-plans are under preparation or revision, to advise the officers in charge of the work regarding the general lines on which it should be conducted, and, after orders have been passed on the working-plans, to watch their execution, so as to bring any unauthorized deviation to the knowledge of the Local Government.

8. Although the importance of working the Government forests on rational principles and to the greatest advantage has made itself specially felt during the last few years, it was the knowledge that this state of things must come about which induced the Government many years ago, guided by the counsels of their late Inspector-General of Forests, to procure gradually a staff of Forest Officers skilled in the science of Forestry, as practised in those European countries where rational Forestry has been part of the general administration for a long time past. Many excellent officers joined the staff of the Department when first started, who, though untrained in forestry at the outset, have done really good work for Government, and who have become thorough administrators. Indeed, of the 15 Conservators of Forests at present controlling the forest administration in the several provinces of India, not less than 11 belong to this class of Officers, and without the administrative ability which they brought to bear upon the business, it would have been impossible to build up the Department. The preliminary part of the work, the demarcation and settlement of the forest estates, approaches, however, completion, and their management according to rational principles must now be worked out in detail. Hence the necessity for a specially skilled agency. For the professional education of the superior staff arrangements were made as early as 1866, and up to date 79 Officers trained in France and Germany have joined the Department in India. It is now contemplated to make the Department to a considerable extent independent of foreign countries, and to start a Forest School in connection with the Coopers Hill Engineering College in England.

9. An equally important subject is the training of a staff of executive Officers ordinarily called Rangers. Until quite lately the executive Officers were recruited from a variety of sources. Some entered as Forest-Guards, and by hard work and elementary study, made their way up to the rank of executive Officers; but the majority of them entered through the channel of office establishments, or they were appointed direct from elementary schools or from other employment. The difficulties of obtaining an efficient staff of these Officers were very great, and they increased year by year. Under these circumstances, the Forest School at Dehra Dun was started in 1878; it commenced by giving a practical training, but a course of theoretical instruction was added in the summer of 1881. At the outset the instruction could only be given in the English language. The students of the English class must have served for at least twelve months as Foresters, and they must have passed the Entrance Examination of an Indian University. If they pass successfully through the School, they leave with the Ranger's certificate, and they are ordinarily appointed as Rangers on return to their province. The exclusion of students who are not acquainted with English was the result of necessity at the outset, which was only to be maintained until arrangements could be matured to teach also in Hindustani. A class of the latter kind is now about to be started, but as the instruction can as yet be only of a very elementary nature, this class will be one for the training of Foresters, who, after their return from the School, can qualify for promotion to the rank of Ranger by further practical service of not less than two years. Arrangements have been made to admit to the Forest School 30 students annually, and this number will be wanted to meet the ever-increasing requirements of the Department.

10. Thus arrangements have now been matured to procure a staff which can regulate the working of the forests according to rational principles and the lessons taught by forest science, and another staff of executive Officers who can be entrusted with the actual execution of the working-plans. Both classes of Officers are essential if the Department is to fulfil its mission, and it is to be

hoped that nothing will occur to interfere with the proper and suitable training of either the one or the other.

11. On the whole, forest conservancy in India is now fairly secure. This result has not been achieved without difficulties and opposition. In most cases the people had been accustomed to roam at their pleasure over the Government forest estates and to cut where they liked and in the most improvident manner. A considerable reluctance to interfere with that state of affairs existed. But as the real necessities of the case and the interests at stake became more and more manifest to the enlightened rulers of the country, it was recognized that endeavours must be made to prevent a further destruction of the forest property of the State, by regulating the use of the forests without depriving the people of the forest produce required for their domestic arrangements. After a protracted struggle these wise counsels have prevailed, and the permanent preservation of a considerable area of forest lands has now been placed beyond doubt. Forest conservancy has been recognized as an important part of the general administration of the country, and the labours of those who have struggled for this result have not been in vain. The successors of the pioneers of the Department must now do their duty by constantly improving the management of the estates which they hold in trust, and thus render them an everlasting and increasing benefit to the general community. *To derive the greatest possible benefit from these estates with the smallest possible inconvenience to the people must be the watchword of every Forest Officer in India.*

CHAPTER I.—AREA AND BOUNDARIES.

General.

12. The Government forests, which are entirely or partially under the management of the Forest Department, comprised the following areas on the 1st April 1863:—

Province.	Area, in Square Miles.				Remarks.
	Reserved Forests.	Protected Forests.	District Forests.	Total.	
Bengal	4,322	2,325	5,107	11,754	
North-Western Provinces and Oudh ...	3,339	99	118	3,556	
Punjab	1,228	311	3,155	4,694	
Central Provinces	*19,430	...	318	19,748	* 2,593 are first class reserves, the rest second class reserves.
British Burma	3,427	...	?	†3,427	
Assam	2,177	662	6,766	9,605	† 398 square miles are toungya areas.
Coorg	233	...	?	233	
Ajmere	122	...	?	122	
Baluchistan	...	...	9	9	
	34,278	3,397	15,473	53,148	
Berar	1,389	...	2,955	4,344	
Total Bengal Presidency ...	35,667	3,397	18,428	57,492	
Madras	2,782	...	?	2,782	
Bombay	9,823	5,173	?	14,996	
Grand Total ...	48,272	8,570	18,428	75,270	

This table is not yet complete; it is hoped that it will be possible to give in the next review the areas of District Forests in Burma, Coorg, Ajmere, Madras, and Bombay. By "District Forests" are understood areas wholly or partially at the disposal of Government, which have not been constituted reserved or protected forests under the Forest Law of the province in which they are situated.

13. The totals of Reserved and Protected Forests compare as follow with those of the previous year:—

Year.	Area, in Square Miles.		
	Reserved.	Protected.	Total.
1882-83	48,272	8,570	56,842
1881-82	46,213	8,612	54,825
Increase in 1882-83	2,059	...	2,017
Decrease in „	...	42	...

The changes which have taken place during the year are distributed among the several provinces in the following manner:—

Province.	Area, in Square Miles.					
	Reserved Forests.		Protected Forests.		Total.	
	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.
Bengal	86	...	...	...	86	...
North-Western Provinces and Oudh ...	13	...	1	...	14	...
Punjab	68	...	...	...	68	...
Central Provinces	...	...	...	...	...	...
British Burma	153	...	...	...	153	...
Assam	111	...	3	...	114	...
Coorg	...	1	...	...	...	1
Ajmere	...	...	...	...	...	...
Total ...	430	...	4	...	434	...
Berar	...	5	...	...	...	5
Total Bengal Presidency ...	425	...	4	...	429	...
Madras ...	1,600	...	...	...	1,600	...
Bombay ...	34	...	...	46	...	12
Grand Total ...	2,059	...	...	42	2,017	...

The principal increase occurred in Madras, and it is due to a re-classification of the areas hitherto under the management of the Department.

14. The Reserved Forests may, according to the Law under which they were constituted, be classified as follow:—

	Square Miles.
Under the Indian Forest Act, 1878	39,703
„ „ Burma „ „ 1881	3,427
„ „ Forest Act of 1865	233
„ Local Rules, Hazara	236
„ „ „ Ajmere	122
„ „ „ Berar	1,389
„ Leases	380
	45,490
Add Madras Reserves	2,782
Total ...	48,272

The Protected Forests have all been constituted under the Indian Forest Act, 1878, as none of the other Acts or Regulations recognize a second class of demarcated State forests.

Bengal.

15. The area of the forests under the management of the Department and the changes which have taken place during the year are as follow:—

Class of Forests.	Area, in Square Miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year
Reserved Forests	4,236	94	8	4,322
Protected „	2,325	.....	.....	2,325
Total ...	6,561	94	8	6,647
Add District Forests	.....	.....	.....	5,107
				11,754

The additions to the reserves were made in the Darjeeling District. The exclusions are due to corrections of areas and to the surrender of about 4 square miles in Palamow. Several additions to the reserves have been made since the close of the year under review, and further additions are contemplated.

The Protected Forests are situated in the Sundarbans and in Orissa. Those in the former district are not considered permanent forest estates, while the bulk of those in Orissa are now being converted into reserves.

16. The demarcation of the forests has received attention during the year. The following data show the work done:—

	Length of boundary, in miles.	Cost per mile, in rupees.
New demarcations	197	13
Clearing of old boundaries and repairing of boundary marks	583	9

or a total length of 780 miles of boundary cleared or repaired during the year. These operations are of great importance, as the protection and ultimate improvement of the forests depend to a large extent on judiciously selected and well defined boundaries.

North-Western Provinces and Oudh.

17. The forest area under the control of the Department has been increased by 8 square miles, in consequence of corrections (based on surveys) and of small additions. It stood as follows at the close of the year:—

Circle.	Area of Forest, in Square Miles.			
	Reserved.	Protected.	District.	Total.
Central	1,473	99	118	1,690
Oudh	1,090	.....	.....	1,090
School	776	.....	.....	776
Total in 1882-83 ...	3,339	99	118	3,556
Total in 1881-82 ...	3,331	99	118	3,548
Increase in 1882-83	8	.....	.....	8

The areas shown as District Forests are situated in the Banda District. Of these, 85 square miles are the property of Government, and it is proposed to acquire the remaining 33 square miles, now under Government control, as opportunity offers, the private owners interested in them receiving in the meantime a share in the net income.

The demarcation of the forests has received attention during the year, and is reported as nearly complete in all divisions.

Punjab.

18. The areas under the mangement of the Department and the changes made during the year are exhibited in the following statement:—

Year.	Area, in Square Miles.			
	Reserved Forests.	Protected Forests.	District Forests.	Total.
1882-83	1,228	311	3,155	4,694
1881-82	1,160	311	3,323	4,794
Increase in 1882-83	68	.....	.....	.....
Decrease „ „	.....	.....	168	100

The increase in the area of Reserved Forests is small, and no additions have been made to the Protected Forests. The subject is, however, receiving attention, and it is hoped that the definite formation of forest estates to be permanently maintained as such, will be vigorously pushed on, so as to make the full strength of the forest staff available, at an early date, for the protection, improvement, and systematic working of the forests. The decrease of 100 square miles in the total forest area is mainly due to transfers of District Forests from the charge of the Forest Department to that of the Civil Officers.

Central Provinces.

19. The changes made during the year are as follow:—

Class of Forests.	Area, in Square Miles.		
	At the commencement of the year.	Added or excluded.	At the close of the year.
First Class Reserves	2,588	+ 5	2,593
Second „	16,842	— 5	16,837
Total Reserves ...	19,430	.....	19,430
District Forests	289	+ 29	318
Grand Total ...	19,719	+ 29	19,748

Five square miles were transferred from the second to the first class Reserves, and the District Forests were increased by 29 square miles, chiefly in consequence of resumptions and purchases in the Balaghat District. The transfers from the second to the first class Reserves are as yet insignificant; but the

Chief Commissioner has urged more vigorous action in this matter on the Conservator of Forests.

20. The boundaries of the 1st class Reserves are in fair order, but those of the 2nd class Reserves are not in a satisfactory condition. It has now been arranged to push on demarcation, and it is hoped that the Report for 1883-84 will show considerable progress in this respect. It is essential that the work should extend to the marking off, with substantial boundary marks, of all areas inside the reserves in which cultivation may be permitted.

British Burma.

21. The Burma Forest Act recognizes only one class of demarcated State forests, which are called reserves. The progress made in the constitution of such estates will be seen from the following statement :—

	Area, in Square Miles.		
	Forest area.	Toungya area.	Total.
Reserved on the 1st April 1882	2,876	398	3,274
Added during the year	153	.....	153
Total on the 1st April 1883 ...	3,029	398	3,427

This area is divided as follows between the two Circles :—

Circle.	Area, in Square Miles.		
	Forest area.	Toungya area.	Total.
Pegu	2,440	398	2,838
Tenasserim	589	.....	589
Total ..	3,029	398	3,427

In the previous year an area of 836 square miles was added to the reserves; the small extent of additions made in 1882-83 is due to the introduction of the new Forest Act, which necessitated a change of procedure. The delay was, however, only temporary, as several extensive blocks have been gazetted since the close of the year.

22. Regarding the formation of State Reserves generally it may be noticed that the estimate of 3,474 square miles made by Mr. Brandis, the late Inspector-General of Forests to the Government of India, has now been reached; but the selection of further reserves should continue as long as valuable teak areas are available, which can be reserved without inconvenience to the people, and which are not likely to be required for the extension of cultivation, especially as the proportion of reserves to the total area of the province is as yet small. In this respect it should not be overlooked that Burma is the principal source of teak timber in the world, and that it is the duty of the Government to provide for the falling off which may, after the lapse of a limited number of years, be expected to occur in the outturn of the trans-frontier teak forests.

The formation of cutch reserves has been commenced; but the area requires to be considerably increased before the permanent manufacture of cutch can be regarded as placed beyond doubt. The subject is, however, one of considerable difficulty, as most of the cutch areas which now remain are scattered amongst cultivated lands.

23. Fair progress seems to have been made in the demarcation of the reserves, but it has not been possible to obtain a clear idea of the state of the work, and it is hoped that the Report for 1883-84 will show in a tabular form the length in miles of boundaries actually demarcated and that remaining to be marked off on the ground.

Assam.

24. The changes which have occurred during the year are as follow:—

Class of Forests.	Area, in Square Miles.		
	At the commencement of the year.	Added.	At the close of the year.
Reserved Forests	2,066	111	2,177
Protected „	659	3	662
District „	5,286	1,180	6,766
Total Forest area under the management of the Department. ..	8,011	1,594	9,605

The principal additions to the reserved forests were made in the Kamrup and Naga Hills Districts, while the large additions to the district forests, due to corrections and further explorations, occurred in Goalpara, Kamrup, Nowgong, Sibsagar, and Cachar, those in the last-named district being beyond revenue limits.

Protected forests exist in four districts, namely:—

	Square miles.
Kamrup	3
Sibsagar	30
Lakhimpur	459
Sylhet	170
Total ...	662

It has been decided to convert the protected forests of Sylhet into reserves—a procedure which it is proposed to apply also to most of the protected forests in Lakhimpur.

25. The present reserves have a length of 725 miles of demarcated boundaries. Of these, 403 miles were cleared and 290 miles inspected by the District Forest Officers. The latter figure does not include the boundaries inspected in Lakhimpur, for which district no return has been received. It is hoped that all boundaries will in future years be kept open. The expenditure charged during the year under the corresponding head is Rs. 7,601, so that the average cost per mile cleared would appear to be about Rs. 19. This rate will doubtless be considerably reduced when all boundaries are cleared annually, and the total expenditure under this head is therefore not likely to increase.

Coorg

26. The area of the demarcated or Government forests has been reduced from 234 to 233 square miles in consequence of corrections. No other changes have taken place. The demarcation and survey of the ghat forests are in progress, preparatory to their being added to the Government forests; during the year under review a length of 72 miles has been cleared and surveyed. The boundaries of all the eastern forests are clear, but it appears that these areas are not demarcated by boundary pillars. It has been suggested that

the erection of such pillars should receive attention at an early date, especially where the forests adjoin private lands.

Ajmere.

27. No change took place in the area of the reserves, which remains at 122 square miles. The formation of further reserves is, however, under consideration, and it is expected that the area will, for the present, be increased to 156 square miles. Some further additions may become feasible during the impending Settlement.

The boundaries are reported to be in good order, except that the pillars require re-numbering, which work it is proposed to do during the season of 1883-84.

Berar.

28. The changes in the forest areas made during the year are as follow:—

Class of Forest.	Area of Forests, in Square Miles.			
	At the commencement of the year.	At the close of the year.	Increase.	Decrease.
State Reserves	1,086	1,106	20	...
District „	308	283	...	25
Unreserved Forests	3,030	2,955	...	75
Total ...	4,424	4,344	...	80

The changes under reserved forests are principally due to the transfer of the Amdari forest from District to State reserves, and those in the unreserved forests to fluctuations in the area under cultivation. The new classification of the areas is still proceeding. The reserves constituted up to date have all been demarcated.

Madras.

29. The area of reserves existing in Madras is stated to be 2,782 square miles, and it comprises the forests which have hitherto been considered as under the more special management of the Department. Owing to the passing of the Madras Forest Act, No. V. of 1882, an entirely new classification must be made, so that the areas recorded as reserves will, for some years to come, undergo considerable changes.

Bombay.

30. The changes which occurred during the year in the areas under the control of the Forest Department are as follow:—

Class of Forests.	Area, in Square Miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved Forests	9,797	229	203	9,823
Protected „	5,219	80	126	5,173
Total ...	15,016	309	329	14,996

The areas remaining at the close of the year were distributed over the three Circles in the following manner :—

Circles.	Area, in Square Miles.		
	Reserved Forests.	Protected Forests.	Total.
Northern	7,580	1,832	9,412
Southern	1,638	3,341	4,979
Sind	605	.....	605
Total ...	9,823	5,173	14,996

31. The work of demarcation and settlement has been continued. At the close of the year 3,183 square miles had been finally disposed of in the Northern Circle and 1,538 square miles in the Southern Circle. No further enquiries appear to be necessary in the old Sind reserves, so that the total area finally disposed of amounts to 5,326 square miles. Considerable progress has been made in a large portion of the remaining areas already declared reserved and protected forests, and in areas which it is proposed to add to either one or the other of these classes of forests; but as the task is of a laborious nature, it is likely to require a few years more to complete it.

Leased Forests.

32. The area of leased forests included amongst reserves has, owing to corrections, been reduced from 402 to 380 square miles. The payments made during the year, including payments to shareholders in forests managed by Government, were as follow :—

	Rs.
North-Western Provinces and Oudh	12,826
Punjab	36,740
Central Provinces	251
Berar	17,120
Total Bengal Presidency ...	66,937
Madras	10,835
Bombay	16,158
Grand Total ...	93,930

Cost of Demarcation.

33. The outlay on account of the demarcation of the forests was as follows :—

	Rs.
In the Bengal Presidency	61,918
„ Madras, „	6,067
„ Bombay „	6,996
Total ...	74,981

Compensation for Land and Rights.

34. The undermentioned amounts were paid during the year under this head :—

	Rs.
Bengal Presidency	20,100
Madras „	12,488
Bombay „	12,930
Total	45,518

CHAPTER II.—SURVEYS AND WORKING-PLANS.

Surveys

35. The operations of the Forest Survey Branch extended during the year over parts of Kumaun and Garhwal, Tehri-Garhwal, Jaunsar, and Berar, while a number of boundary pillars were surveyed and boundaries laid down in Dehra Dun and in Saharanpur. Only 75 square miles remained at the close of the year to be surveyed in Kumaun and Garhwal, so that the main body of the Branch will, for some years to come, be employed on the survey of the Melghat Taluk in Berar.

36. The outturn of work during the year comprises an area of 361 square miles plane-tabled on the scale of 4″ = 1 mile, against 265 square miles in the previous year. This favourable result is said to be chiefly due to an exceptionally healthy season. The area triangulated was 85 square miles. Eight sheets of the Kumaun and Garhwal survey were published, and one had gone to press at the close of the year. The cost per square mile estimated on the total area plane-tabled came to Rs. 91, against Rs. 104 in the preceding year; and the total cost of the Kumaun and Garhwal survey has been reduced from Rs. 116 to Rs 112 per square mile. The total cost of the Jaunsar and Tons survey up to date is Rs. 186 per square mile, and this comparatively high rate is said to be due to some extent to the inclusion of a considerable amount of boundary and road survey work, against which no area can be shown.

37. The progress of the forest survey in British Burma, conducted by the General Survey Department of India, has so far not been satisfactory, owing to the exceptional difficulties which were met with at the commencement of the operations. It has now been decided to survey the forests on a modified 4-inch scale, which will enable the survey party to turn out about 800 square miles annually at a cost of Rs. 135 per square mile debitable to the Forest Department.

38. The General Survey Department is also surveying the Thana District in Bombay on a scale of 4″ = 1 mile. During the year 1881-82 an area of 940 square miles was topographically surveyed in Thana, at a cost of Rs. 53 per square mile, of which Rs. 20 are debited to the Forest Department. In 1882-83 an additional area of 665 square miles was surveyed. Another party has surveyed the whole of the Dangs, with the exception of Ketak Karupara, which is surrounded by Gaikwari territory. The work of mapping is in progress.

Working-Plans.

39. At the close of the year provincial working-plans divisions had been started in the North-Western Provinces and in British Burma. Since then a similar division has been established in the Punjab, and one is contemplated in Bengal. The subject of working-plans is of the utmost importance, and considerable changes in the organization of the work are about to be initiated, which will be recorded in the next Review. In the meantime the work is progressing in the above-mentioned provinces.

CHAPTER III.—PROTECTION AND IMPROVEMENT.

1.—GENERAL PROTECTION.

40. In the Reviews of past years the numbers of persons prosecuted for breaches of the Forest Law have generally been given. Of late years, however, a very large proportion of such breaches have been compounded under the

Forest Law; hence a somewhat different classification must now be introduced. The cases which occurred during the year were as follow :—

Province.	Number of new Cases during the Year.			Proportion of convictions to total number of cases decided by the Courts.
	Taken into Court.	Compounded.	Total.	
Bengal	134	1,069	1,203	70
North-Western Provinces and Oudh ...	141	436	577	84
Punjab...	903	P	P	75
Central Provinces	635	8,921	9,556	87
British Burma	120	P	P	83
Assam	50	P	P	75
Coorg	13	.....	13	91
Ajmere...	62	.....	62	87
Biluchistan	10	.....	10	70
Total ...	2,068	.....	.....	80
Berar	437	.....	437	86
Total Bengal Presidency ...	2,505	.....	.....	81
Madras...	746	.....	746	83
Bombay	1,979	P	P	73
Grand Total ...	5,230	.....	.....	78

As the numbers of cases compounded have not been given for all provinces, it is difficult to criticise the figures with any advantage. It is hoped that the Reports for 1883-84 will be complete in this respect.

41. The percentage of convictions obtained in the regular courts, amounting to 78 per cent. of the cases decided, is satisfactory. The number of cases taken into court in the Bengal Presidency is considerably lower than in the preceding year.

Bengal.

42. The total number of cases is distributed as follows amongst the divisions :—

Divisions.	Number of Cases		
	Taken into Court	Compounded.	Total.
Sundarbans	30	950	980
Teesta	6	82	88
Darjeeling	19	37	56
Orissa (Koordah)	55	...	55
Kurseong	10	...	10
Chittagong	7	...	7
Jalpaiguri	5	...	5
Buxa	1	...	1
Chota Nagpore	1	...	1
Total ...	134	1,069	1,203

The bulk of the offences occurred in the Sundarbans, and next come the two hill divisions of Teesta and Darjeeling, then Koordah in Orissa. The cases

in the other divisions are very few. On the whole, about one offence for every ten square miles of forest under the management of the Department has been recorded, which must be considered very moderate.

North-Western Provinces and Oudh.

43. The cases of breaches of the forest rules which occurred during the year were distributed among the three circles as follow :—

Circle.	Number of Cases		
	Taken into Court.	Compounded	Total.
Central	60	386	446
Oudh	63	3	66
School	18	47	65
Total ..	141	436	577

The total number of cases during the year under review represents one offence for every six square miles of forest under the control of the Department. The great majority of the cases are reported to have been of a petty nature.

Punjab.

44. The number of prosecutions on account of the breaches of the forest rules rose from 710 in the previous year to 903 in the year under review; but as the numbers of cases compounded by Forest Officers in these years have not been given, it is impossible to draw any conclusions from the above figures.

Central Provinces.

45. The breaches of the forest rules brought to notice during the year are as follow :—

Class of Reserves.	Number of Cases		
	Taken into Court.	Compounded.	Total
First Class Reserves	30	467	497
Second „	605	8,454	9,059
Total in 1882-83 ...	635	8,921	9,556
Total in 1881-82 ...	800	8,428	9,228
Increase in 1882-83	.....	493	328
Decrease „ „	165	.....	.. ...

A less number of cases was taken into court, but more were compounded, while the total number shows a slight increase, which appears to be due to the submission of more complete returns than in the previous year. On the whole, one forest offence has been committed in every two square miles of forest under the control of the Department. The results of forest protection during the year are considered satisfactory.

British Burma.

46. Only 120 cases of breaches of the forest rules were taken into court, which, considering the forest area, is a very small number.

Assam.

47. During the year under review 50 cases of breaches of the forest rules were taken into court, as compared with 37 in the previous year. The number of cases compounded under section 67 of the Forest Act has not been given. On the whole, forest offences in Assam are few in number, as the people

can draw all their ordinary requirements without payment from the District Forests. Of illicit grazing only one case occurred, while the 28 cases of unauthorized felling of trees refer mostly to timber cut for export.

Coorg.

48. The number of prosecutions for breaches of the forest rules amounted to 13, against 20 in the previous year. In ten cases convictions were obtained, one was dismissed, and two are pending. Forest offences are comparatively few in number, which is due to the fact that the people of Coorg are most liberally treated in the matter of timber and other forest produce necessary for their domestic requirements.

Ajmere.

49. The cases of breaches of the forest rules which occurred during the year numbered 62 as compared with 102 in 1881-82, while 3,736 head of cattle were impounded as against 5,815 in the previous year. The improvement in these respects is satisfactory, and is said to be due to the fact that the zamindars were sufficiently supplied with grass and wood for their actual requirements, thus obviating the necessity for their appropriating those articles in an unauthorized way.

Berar.

50. The number of prosecutions for breaches of the forest rules has increased from 369 in 1881-82 to 437 in 1882-83; but no importance is attached to this fact by the local officers, as fluctuations in this respect are always likely to occur.

2.—PROTECTION FROM FIRE.

General.

51. The subjoined table gives the areas under fire protection and the results of the year's operations:—

Province.	Area, in Square Miles.		Percentage of failures to area attempted.	Cost		Year when fire conservancy commenced.	Proportion of area under fire protection to total area of reserves, in per cent.
	Attempted.	Actually protected.		Per square mile protected.	Per acre protected.		
				Rs.	Pies.		
Bengal	606	606	9	19	6	1872	15
North-Western Provinces and Oudh ...	937	920	2	38	11	1869	28
Punjab	29	25	14	20	6	1872	2
Central Provinces ...	1,426	1,390	3	11	3	1864	7*
British Burma ...	211	180	15	70	21	1857	6†
Assam ...	207	153	26	58	17	1873	10
Coorg	193	193	*Nil.*	13	4	1876	83
Ajmere	122	122	*Nil.*	5	1½	1874	100
Total ...	3,792	3,589	5	21	7	.....	11
Berar	1,034	973	6	5	1½	1870	74
Total Bengal Presidency	4,826	4,562	5	20	6	.....	14
Madras	609	569	7	18	5	1867	22
Bombay	Data incomplete.						

* This refers to the 1st and 2nd class reserves. The percentage of the 1st class reserves under fire protection amounts to 56.
† Exclusive of Toungya areas the percentage amounts to 7.

The above table shows that 14 per cent. of the area of Reserves in the Bengal Presidency are under fire protection; but if the second class reserves in the Central Provinces be omitted, the percentage is raised to 25 per cent., or one-fourth of the whole area. These data show that, although many areas are not in need of special measures, the work of fire protection must gradually increase; but it is essential that this should not be done at a faster rate than is compatible with the safety of the areas already under protection.

The Central Provinces show the largest area under protection, and next come Berar, the North-Western Provinces and Oudh, Bengal, and Madras.

Protection has been most successful during the year under review in Ajmere, Coorg, the North-Western Provinces and Oudh, and the Central Provinces, and least successful in Assam, British Burma, and the Punjab.

The cost per square mile has been highest in Burma, Assam, and the North-Western Provinces and Oudh, and lowest in Berar, Ajmere, and the Central Provinces.

52. The total results during the last five years in the Bengal Presidency are as follow:—

Year.	Area, in Square Miles.		Percentage of failures to area attempted.
	Attempted.	Actually protected.	
1878-79	3,474	2,938	15
1879-80	4,072	3,709	9
1880-81	4,465	4,194	6
1881-82	4,897	4,283	13
1882-83	4,826	4,562	5
Average ...	.....	.....	9

The average failures during the last five years amounted to 9 per cent. of the area under protection, which shows an improvement of 3 per cent. as compared with the quinquennial average shown last year.

Bengal.

53. The percentage of failures to area attempted has increased from 7 to 9 per cent. The most important failures occurred in the Jalpaiguri and Buxa divisions. In the former division 47 square miles out of a total of 154 square miles attempted were burnt, and in the latter 11 out of 165 square miles. One of the fires in Buxa was due to neglect on the part of the Ranger in temporary charge, and the other was caused by travellers, who attempted to drive away by such means a herd of wild elephants. The origin of most of the fires which occurred in the Jalpaiguri Division has not been satisfactorily explained, and it seems that the arrangements made for protection against fire are capable of improvement. It is acknowledged, however, that the season was, on the whole, unfavourable for fire protection. The success obtained in the Kurseong and Palamow divisions is satisfactory, and it is hoped that it will continue. The detailed arrangements which have been made in several divisions for camping grounds will assist in the prevention of fires, and it is hoped that the system will, at an early date, be extended to all forests which are liable to damage by fire.

North-Western Provinces and Oudh.

54. The results of fire protection in the several circles are as follow :—

Circle.	Area, in Square Miles.		Proportion of failures to area attempted, in per cent.	Cost of Area successfully protected.	
	Attempted.	Failures.		Per square mile, in rupees.	Per acre, in pies.
Central	414	9	2	45	13
Oudh	288	3	1	32	9
School	235	5	2	33	10
Total in 1882-83... ...	937	17	2	38	11
Total in 1881-82... ...	908	87	10	40	12
Increase in 1882-83	29	..	...	..	...
Decrease „ „	...	70	8	2	1

On the whole, the results obtained in the year under review are much more favourable than those of 1881-82, though 58 fires occurred which burnt 17 square miles. Many of the fires were due to carelessness on the part of the establishments employed on line-burning. It will probably be difficult to eliminate this source of danger until a superior class of executive subordinates has been secured, who can be made responsible for such work in their respective ranges. Fires caused by travellers might be avoided, or be reduced in number by the establishment of fixed camping or resting grounds at suitable distances along the frequented roads within the fire-protected areas.

Punjab.

55. Most of the forests can be protected against fire without special measures. A considerable increase has, however, taken place in the area overrun by fires. Though the total area burnt, 48 square miles, is as yet comparatively small, it is satisfactory to notice that vigorous steps are contemplated to meet the difficulty in time before the evil assumes larger dimensions.

Central Provinces.

56. The areas under fire protection were practically the same as those in the previous year, and the results are as follow :—

Class of Forests.	Area, in Square Miles.			Cost per Area successfully protected.	
	Attempted.	Failures.	Proportion of failures to area attempted, in per cent.	Per square mile, in rupees.	Per acre, in pies.
First Class Reserves	1,356	22	2	51	3
Second „	70	14	20	15	5
Total in 1882-83	1,426	36	3	11	3
Total in 1881-82	1,426	204	14	11	3

These data show that the results were much more favourable in 1882-83 than in the preceding year, while the cost per acre successfully protected was the same. On the whole, the results are very satisfactory, and it is hoped that the improvement effected during the year will be lasting.

British Burma.

57. The cost of fire protection, Rs. 70 per square mile, is very high, and the success is only moderate; moreover, the area burnt includes 228 acres of plantations. On the whole, fire protection is as yet backward in Burma, the area under protection being only 211 square miles out of a total area of forest reserves, amounting to 3,029 square miles, exclusive of toungya areas. It is hoped that this branch of forest work will receive special attention when the formation of reserves has been completed.

Assam.

58. The results of fire protection during the year, compared with those of former years, are as follow :—

Year.	Area, in Square Miles.		Proportion of failures to area attempted, in per cent.
	Attempted.	Failures.	
1879-80	145	1	1
1880-81	163	2	1
1881-82	164	66	41
1882-23	207	54	26
Average			17

These data show that the success attained during the last two years was very partial. During both years the chief failures occurred in Goalpara. The season of 1882-83 is described as unfavourable.

Coorg.

59. The results of fire protection were very satisfactory, the area burnt being only 16 acres out of 193 square miles attempted. This is a great improvement on the results of 1881-82, when as much as 62 per cent. of the area attempted was burnt. The favourable results of the year under review are said to be due to an exceptionally wet monsoon and to seasonable showers of rain which fell early in spring. It appears, however, that the general arrangements for the protection of the areas were more complete than those of the previous year.

Ajmere.

60. The whole area of reserves, 122 square miles, was under protection, and only 13 acres were burnt. Almost complete success has now been obtained for some years past.

Berar.

61. The following table exhibits the results of fire protection during the last three years:—

Year.	Area, in Square Miles.		
	Attempted.	Failures.	Proportion of failures to area attempted, in per cent.
1880-81	882	14	2
1881-82	936	72	8
1882-83	1,034	61	6

Although the results are on the whole satisfactory, it is noticed that numerous fires have again occurred in connection with the burning of the fire lines. It is hoped that the accidents caused in this manner will in future years be reduced to a minimum by a more strict supervision of the establishment employed on the work of line-burning.

Madras.

62. A fair commencement has been made to protect some of the more important forests from fire, as indicated in the following statement:—

Circle.	Area, in Square Miles.		Proportion of failures to area attempted, in per cent.	Cost of Area successfully protected.	
	Attempted.	Failures.		Per square mile, in rupees.	Per acre, in pies.
Northern	282	39	14	22	7
Southern	327	1	0·3	15	4
Total ...	609	40	7	18	5

Continued and successful fire protection in the principal catchment areas of the Madras rivers is of such importance that this branch of forest work will, no doubt, receive special attention as soon as the progress in the demarcation and settlement of reserves permits of this being done.

Bombay.

63. The returns of fire protection in Bombay are incomplete. It is hoped that future reports will give an accurate account of this branch of forest work.

3.—REPRODUCTION OF THE FORESTS.

General.

64. Owing to the vast extent of the Indian forests and the high cost of artificial operations, the natural system of reproduction must be chiefly relied on; that is to say, the forests must be properly protected, fires kept out, and, whenever necessary, certain areas must be closed against grazing, either altogether or for certain seasons of the year, until the young growth in the areas under reproduction is no longer liable to be injured by cattle. In many instances, however, natural reproduction will have to be assisted by sowing and planting, if the duration of reproduction is not to be indefinitely prolonged. Where seed trees are wanting, and where the introduction of new species is desired, artificial reproduction must; under any circumstances, be resorted to. Under these circumstances, it will always be difficult to classify the reproductive works. An attempt should, however, be made in future Annual Reports to do this in as satisfactory a manner as the circumstances of each province will permit.

65. The remarks on natural reproduction recorded in the reports for 1882-83 are, as a rule, of too general a description to be of much use. In future reports this subject might usefully be dealt with in detail, by recording the progress made in each closed block. Closing against grazing and fire conservancy are expensive and often necessitate the enforcement of restrictions on the people, and it is essential that the results of these measures should be ascertained

and recorded in detail, to enable the Government to judge how far they have led to results which are commensurate with the means adopted, and how far artificial reproduction is necessary in each case where natural means have failed, or are unlikely to accomplish the re-stocking of the areas under reproduction within a reasonable time.

66. The area of plantations may be seen from the following table:—

Province.	Area, in Acres.			
	At the commencement of the year.	Added during the year.	Excluded during the year.	At the close of the year.
Bengal	2,005	434	.....	2,439
North-Western Provinces and Oudh ...	3,330	281	.....	3,611
Punjab	16,201	188	.....	16,389
Central Provinces	Not given.			
British Burma	10,100	1,121	.....	11,221
Assam	1,151	111	.....	1,262
Coorg	437	152	.....	589
Ajmere	413	.....	58	355
Biluchistan	13	8	.....	21
Total ...	33,650	2,237	.....	35,887
Berar	1,409	901	.....	2,310
Total Bengal Presidency ...	35,059	3,138	.....	38,197
Madras	.....	.....	.....	62,949
Bombay	Not given.			
Grand Total ...	.....	.....	.....	101,146

It was the practice in former years to give the expenditure incurred on plantations, but some of the areas have already yielded large returns, the value of which cannot be gathered from the provincial reports. Under these circumstances, it would be misleading to give the expenditure only, and the column in question will be omitted until it is possible to give also the receipts.

67. The largest amount of actual plantation work has been done in Madras and next in the Punjab, while the *toungya* teak plantations in Burma are now being so rapidly extended that the total area planted in that province is likely to surpass, at an early date, the area of plantations in the Punjab. In Bombay a great deal of sowing is done to assist natural reproduction, but these operations cannot be shown in the above table.

Bengal.

68. The information given in the report regarding natural reproduction is scanty, but it is satisfactory to notice that the Conservator and his staff take, on the whole, a hopeful view of the matter. The results of artificial reproduction are as follow:—

	Area, in Acres.		
	At the commencement of the year.	Added during the year.	At the close of the year.
Regular plantations	1,215	164	1,379
Other cultural operations	790	270	1,060
Total for 1882-83	2,005	434	2,439
Total for 1881-82	1,207	798	2,005

The extensions made during the year comprise 96 acres of upper hill forest and 40 acres of bamboos for the supply of the station of Darjeeling, 69 acres in Kurseong, 207 acres in Buxa, and 22 acres in Chittagong. Except in the latter division, the planting was all successful, which is said to be chiefly due to the fact that it is done in lines, while the intermediate jungle is left intact, and thus renders a certain amount of protection to the young plants. The partial failure in Chittagong was due to an unfavourable monsoon.

North-Western Provinces and Oudh.

68. The progress made during the year under review in artificial reproduction is as follows:—

Circle.	Areas planted, in Acres.		
	At the beginning of the year.	Added during the year.	At the close of the year.
Central	1,178	16	1,194
Oudh	791	181	972
School	1,361	84	1,445
Total ...	3,330	281	3,611

Much detailed information on this subject is given in the reports. The most important operations are the rearing of deodar in the School Circle, of sissu in Oudh, and of fruit and hill timber trees in the Central Circle.

Punjab.

70. The areas dealt with artificially, compared with the corresponding figures of the previous year, are as follow:—

Year.	Areas planted, in Acres.		
	Regular plantations.	Other cultural operations.	Total.
1882-83	15,324	1,065	16,389
1881-82	15,448	753	16,201
Increase in 1882-83	.....	312	188
Decrease „ „	124	...	.....

The decrease under regular plantations is due to fellings and to the action of floods.

The successful rearing of deodar in Kulu and the efforts made to restock the Pabbi Reserve under very adverse conditions have been specially noticed.

British Burma.

71. The following table exhibits the progress made in planting operations during the year:—

	Area planted, in Acres.			Cost, in Rupees.	
	At the commencement of the year.	Added during the year.	Total.	Total from the commencement.	Per Acre
Regular plantations	3,464	21	3,585	3,24,001	90
Successful toungya plantations	3,886	651	4,537	42,346	9
Indifferently stocked toungya plantations and other cultural operations.	2,650	449	3,099	24,853	8
Total ..	10,100	1,121	11,221	3,91,200	35

Owing to a re-classification of the areas since last year, the entries in the first column do not agree with those shown at the close of 1881-82. The additions made during the year, though considerable, are less than those of the previous year. It is noticed that a commencement has been made to reproduce cutch in toungyas, and that the sowing with teak of areas on which the bamboos had died has proved a success. It is hoped that planting operations in the Tenasserim Circle will soon prove as successful as those in the Pegu Circle.

Assam.

72. No mention is made in the Report of natural reproduction. The progress made in planting is as follows :—

	Area planted, in Acres.			Cost, in Rupees.	
	In previous years.	During the year 1882-83.	Total.	Total.	Per Acre.
Regular plantations	1,113	89	1,202	96,581	80
Other cultural operations	38	22	60	3,751	63
Total ...	1,151	111	1,262	100,332	80

The additions consist of 90 acres of rubber plantations in the Darrang District and of 22 acres of ajhar and nahor plantations in the Nambor Forest (Sibsagar Division), while 1 acre of cinchona plantation in the Khasi and Jaintia Hills was struck off. The planting operations are reported as successful. Arranged according to species, the areas stand thus :—

	Acres.
Caoutchouc plantations	1,002
Teak ,, ...	170
Other ,, ...	30
Sowings of Nahor and Ajhar	60
Total ...	1,262

73. In the orders of the Government of India on the report for 1880-81, further extensions of the Charduar rubber plantation in the Darrang and Nowgong Division were suggested, and it is satisfactory to notice that an extension of 100 acres during each of the next two years has been sanctioned by the Chief Commissioner. Considering that the Department has now mastered the art of planting the *Ficus elastica*, and that the estimated cost per acre is put down at Rs. 20 only, it is advisable that these plantings should be conducted on a somewhat larger scale than 100 acres per annum. Under any circumstances, the work should be steadily continued for a number of years to come, and it may be worth while to make some further experiments in growing the rubber plant as an epiphyte. The present rubber plantations are on low land, and it appears advisable to make some of the extensions on somewhat higher ground, so as to ascertain in which locality the yield is greatest.

Coorg.

74. The progress made in planting operations will be seen from the following statement :—

	Area planted, in Acres.		
	At the beginning of the year.	Added.	Total.
Teak plantations	218	55	303
Sandalwood ,, ...	114	57	171
Fuel ,, ...	45	30	75
Total ...	407	142	549
Other cultural operations	30	10	40
Grand Total ...	437	152	589

In the year 1881-82 the planting was not successful, chiefly owing to a scanty rainfall. During the year under review, on the other hand, the operations suffered from an abnormally heavy monsoon, which caused several nurseries to be flooded, resulting in a scarcity of seedlings for transplanting. On the whole, however, the additions are of fair extent, and the greater part of them are reported to be fully stocked.

Ajmere.

75. It has not been shown in the Report what progress the natural reproduction of the forests has made. Small areas cut over in previous years have, on the whole, been fairly well restocked by coppice shoots. No new plantations were made during the year, but 58 acres were struck off the returns as failures, the area (including nurseries) which now remains amounting to 355 acres. About 56 maunds of various seeds were sown during the year, but the results were not satisfactory, as the seeds did not in all instances germinate, and many of the seedlings which came up were damaged by winter frost and summer heat.

Berar.

76. The cultural operations have extended over 901 acres, which have been sown with the seed of various trees in ploughed strips, 3 feet wide and 15 feet apart, the intervening spaces being also sown broadcast. In addition, 8,000 pounds of teak seed were sown broadcast in the Gugamal Reserve. It will be interesting to learn the results of this rough method of propagating teak, as similar experiments made in the forests of the Central Provinces have not led to satisfactory results.

Madras.

77. In plantation work considerable progress had been made in past years, and it is understood that the following areas were stocked at the close of 1882-83:—

	Acres.
In the Northern Circle	19,212
„ Southern „	43,737
Total ...	62,949

This area is much larger than that planted in any other province of British India. Some of the plantations, as, for instance, the Nilambur Teak Plantations and others, have already yielded large returns. The Conservator of Forests of the Southern Circle has attempted to show the regular plantations separately from other cultural operations, and the Conservator of the Northern Circle has separately recorded the topes. It would be an advantage if a uniform classification for both Circles was attempted in the Reports for 1883-84.

Bombay.

78. The data contained in the Reports of the three Circles of the Bombay Presidency are wanting in precision. Very extensive broadcast sowings are made annually, especially in the Northern Circle, with fair results. The systems of dibbling, pitting, and sowing on ploughed land have also been found successful. Regular planting works were executed, but, in the absence of tables showing the areas stocked, it is not possible to detail the results.

4.—COMMUNICATIONS AND BUILDINGS.

79. The outlay under this head during the year is as follows :—

Province.	Roads and bridges.	Buildings.	Other works.	Total.
	Rs.	Rs.	Rs.	Rs.
Bengal	9,506	10,045	53	19,604
North-Western Provinces and Oudh	57,152	45,514	3,516	1,06,182
Punjab	5,488	9,519	150	15,157
Central Provinces .., ...	563	1,588	849	3,000
British Burma .., ...	1,321	17,389	8,411	27,121
Assam	3,926	13,287	60	17,273
Coorg	839	499	.....	1,338
Ajmere	.....	610	.....	610
Biluchistan	.....	.....	.....	.....
Forest Survey	.....	.....	.....	.....
Total ...	78,795	98,451	13,039	1,90,285
Berar	7,438	1,150	193	8,781
Total Bengal Presidency ...	86,233	99,601	13,232	1,99,066
Madras	1,332	4,166	447	5,945
Bombay	22,053	9,367	651	32,071
Grand Total ...	1,09,618	1,13,134	14,330	2,37,082

80. The totals for the Bengal Presidency compare as follow with those of the four previous years :—

	Rs.
1878-79	1,21,822
1879-80	1,66,193
1880-81	1,38,321
1881-82	1,88,027
1882-83	1,99,066
Average per annum ...	1,62,686

The expenditure under these heads has risen considerably of late years. In the North-Western Provinces and Oudh more than a lakh of rupees has been expended during the year under review, of which Rs. 45,514 are debited under Buildings. Rest-houses are essential, but the construction of expensive houses in the middle of the forests should not be overdone. Ordinarily one comfortable house, if necessary double storied, in each charge would be required as forest head-quarters; the others should be structures of a simple and inexpensive description.

5.—SUMMARY OF EXPENDITURE ON DEMARCATION AND IMPROVEMENT OF FORESTS.

81. The expenditure under these heads during the year is as follows :—

Province.	Demarcation.	Compensation for land and rights.	Surveys and working-plans.	Plantations.	Protection from fire.	Other works.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	7,793	16,220	144	11,045	12,524	1,062	48,788
North-Western Provinces and Oudh... ...	9,269	155	1,630	12,081	34,093	7,937	65,165
Punjab	22,118	607	44	27,809	689	1,618	52,885
Central Provinces ...	2,427	650	1,848	632	13,816	4,271	23,644
British Burma ...	9,362	956	6,709	27,268	11,209	163	55,667
Assam	7,601	1,012	4,322	10,657	8,707	7,463	30,762
Coorg	1,318	235	687	13,168	2,544	1	18,253
Ajmere	6	...	1	1,757	575	395	2,734
Biluchistan	190	...	...	90	...	...	280
Forest Survey ...	...	...	6,425	...	...	...	6,425
Total...	60,084	19,835	21,810	1,04,807	84,157	22,910	3,13,603
Berar	1,234	265	5,389	997	5,124	1,092	14,101
Total Bengal Presidency...	61,318	20,100	27,199	1,05,804	89,281	24,002	3,27,704
Madras	6,667	12,488	578	79,583	9,856	53,812	1,62,984
Bombay	6,996	12,930	2,836	14,586	2,348	1,67,896	2,33,592
Grand Total...	74,981	45,518	56,613	1,99,973	1,01,485	2,45,710	7,24,280

82. The following data show the expenditure in the Bengal Presidency compared with the four previous years :—

	Rs.
1878-79	2,98,962
1879-80	2,55,617
1880-81	2,66,925
1881-82	3,22,149
1882-83	3,27,704

The increase which has taken place since 1878-79 is very moderate.

CHAPTER IV.—YIELD AND FINANCIAL RESULTS.

General.

83. The details of the financial results are exhibited in Statements I, II, and III appended to this Review.

The receipts and surplus of the various provinces during the year under review, arranged according to the total amount of revenue, are as follow :—

No.	Province.	Total Revenue.	Surplus.	Deficit.	Proportion of Surplus to gross Revenue, in percent.
		Rs.	Rs.	Rs.	
1	British Burma	25,03,994	12,74,936	...	51
2	Bombay	20,90,353	8,32,594	...	40
3	North-Western Provinces and Oudh	10,13,403	1,74,378	...	17
4	Central Provinces	9,77,647	5,65,399	...	58
5	Madras	8,06,142	2,61,577	...	29
6	Punjab	7,66,710	2,05,959	...	27
7	Bengal	6,93,959	3,11,775	...	45
8	Berar	2,87,043	1,37,011	...	48
9	Assam	2,48,606	76,782	...	31
10	Coorg	1,38,022	73,240	...	53
11	Ajmere	7,126	...	4,158	...
12	Biluchistan	5,039	...	6,922	...
13	Forest Survey	348	...	41,247	...
	Total ...	96,38,591	38,61,323	...	40

84. Burma still stands first as regards gross revenue and surplus; indeed, there has been, owing to the favourable prices obtained for teak, a further considerable improvement in both, as compared with the previous year, the receipts having increased by about three lakhs and the surplus by two lakhs. In Bombay also a considerable improvement has taken place, owing to an enhanced demand for produce, while smaller advancements have been effected in the Punjab, Bengal, Assam, and Berar. Madras, which stood seventh on the list for 1881-82, has now advanced to the fifth place, chiefly owing to the amalgamation of the Jungle Conservancy with the Forest Department. In the Central Provinces a considerable falling off has occurred, which is due to reductions in the departmental operations. The changes in the North-Western Provinces and Oudh are small, the receipts being slightly lower and the surplus somewhat higher than in the previous year.

85. The total forest revenue in the year under review amounted to 96 lakhs of rupees. According to the latest figures for the year 1883-84, the receipts have risen to 104 lakhs, which is a further increase of 8 lakhs as compared with 1882-83.

The proportion of the surplus to the gross receipts in 1882-83 is 40 per cent., as compared with 37 per cent. in the year 1881-82.

86. The surplus revenue has shown a steady increase during the last five years, as may be seen from the following figures:—

Year.	British Territory.				Berar.	Grand Total.
	Bengal Presidency.	Madras.	Bombay.	Total.		
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1878-79	12,29,982	41,890	1,82,732	14,54,604	1,78,320	16,32,924
1879-80	15,00,541	Def. 15,178	4,68,300	20,49,462	1,90,987	23,46,449
1880-81	18,27,836	1,49,835	4,07,711	23,85,382	1,37,587	25,22,960
1881-82	23,08,254	1,15,524	6,70,031	31,03,409	80,526	31,83,935
1882-83	26,36,141	2,61,577	8,32,594	37,24,312	1,37,011	38,61,323

Bengal.

87. The yield of the reserved forests during the year in timber and fuel is as follows:—

	Quantities removed, in Cubic Feet (Solid).				
	Timber.	Fuel.	Total.	Per square mile.	Per acre.
By Government agency	172,964	274,001	446,965	...	...
By private agency	6,579,543	12,171,032	18,750,575	...	...
Free grants	9,730	.....	9,730	...	...
Total ...	6,762,237	12,445,033	19,207,270	4,444	7

The quantities of timber and fuel removed from the protected and district forests without payment cannot be given, but those on which revenue has been paid are as follow:—

	Cubic feet of solid wood.
Timber	511,891
Fuel	1,263,933
Total ...	1,775,824

As this is the first time that a fairly accurate estimate of the total outturn has been made, it will not be possible to compare the data for 1882-83 in detail with those of former years. It appears, however, that the yield has increased during the year by about two millions of cubic feet.

88. Of minor produce, the following articles may be mentioned as having been removed from the forests :—

Articles.	From Reserves.	From Protected and District Forests.	Total.
Bamboos	4,032,925 pieces.	13,143,550 pieces.	17,176,475 pieces.
Canes	17,642 maunds.	34,537 maunds.	52,179 maunds.
Grass	258,854 „	15,155 „	274,009 „
Golpatta	3,505,665 „	8,650 „	3,514,315 „
Hental	2,150 „	84,925 „	87,075 „
Shells	122,220 „	36,975 „	159,195 „
Wax and honey	2,778 „	2,391 „	5,169 „

The quantities given under protected and district forests are only those which have been paid for.

89. The financial results compare as follow with those of the previous year :—

Year.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1882-83	6,93,959	3,82,184	3,11,775
1881-82	6,33,734	3,94,609	2,39,125
Increase	60,225	.....	72,650
Decrease	.....	12,425	.....

The revenue has been increased and the charges reduced, so that the surplus is more by Rs. 72,650 than that of the previous year. The receipts have steadily risen during the last ten years, and there is every prospect that they will continue to increase.

90. Arranged under the main heads of Receipts and Charges, the financial results are as follow :—

	Receipts.	Charges.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
Departmental operations	1,58,131	1,41,337	16,794	.....
Other revenue	5,35,828	1,06,458	4,29,370	.....
Formation, protection, and improvement of forests ...	.....	1,34,389	.....	1,34,389
Total ...	6,93,959	3,82,184	3,11,775	.....

The surplus derived from departmental operations is small, but it is still higher, per cubic foot of wood removed, than that obtained by the sale of produce removed from the forests by purchasers.

The departmental operations are being carried on in the Sub-Himalayan divisions, while in the others nearly all material is removed by private agency. In the former, successful efforts have been made of late to substitute private agency for departmental working, and, if this can be done without a serious sacrifice of revenue and without defeating the objects of forest conservancy, it should be encouraged. A great improvement is apparent in the arrangements made for the working of the Kurseong and Darjeeling divisions.

91. The subjoined table exhibits the distribution of Receipts and Surplus amongst the different classes of forests :—

Class of Forests.	Amounts shown in the Accounts of the Department.		Area under the management of the Department	Revenue, per Square Mile.		
				Gross.	Net.	
	Receipts.	Surplus.			1882-83.	1881-82.
	Rs.	Rs.	Sq. miles.	Rs.	Rs.	Rs.
Reserved Forests	5,92,793	2,48,892	4,322	137	58	42
Protected „	23,565	5,454	1,925	12	3	5
Other „	77,601	57,432	5,107	15	11	10
Total ...	6,93,959	3,11,775	11,354	61	28	21

The net revenue per square mile of reserved forests has risen from Rs. 42 to Rs. 58. Calculated for the whole forest area under the Department, the net revenue has risen from Rs. 21 to Rs. 28 per square mile, which is satisfactory.

North-Western Provinces and Oudh.

92. The numbers of trees of all kinds felled during the year, with their cubical contents, are shown in the subjoined table :—

Circle.	Number of Trees felled	Contents, in Cubic Feet.	
		Total.	Per tree.
Central	60,749	635,375	10
Oudh	1,325,655	1,986,176	1·5
School	14,294	1,059,953	74
Total in 1882-83	1,400,698	3,681,504	2·6
Total in 1881-82	1,150,105	3,676,424	3 2
Increase in 1882-83	250,593	5,080	.....
Decrease „	.....	.....	0·6

93. The total outturn or yield of the forests in the Oudh Circle, which has been given in a uniform measure, is as follows :—

	Cubic feet.
Timber, saplings and poles	1,986,176
Fuel	317,152
Bamboos	100
Total ...	2,303,428

This yield is equivalent to 4½ cubic feet per acre of tree forest. In future Reports it may be found practicable to give the yield in the same manner for the other Circles.

94. The selection fellings made during the year by departmental agency, comprised in the above data, are as follow :—

Circle.	Number of Trees.	Contents in Cubic Feet.	
		Total.	Per tree.
Central	25,898	313,325	12
Oudh	16,942	676,855	40
School	1,898	271,709	143
Total in 1882-83	44,738	1,261,889	28
Total in 1881-82	31,485	1,001,482	32
Increase in 1882-83	13,253	260,407	.....
Decrease „ „	.....	.....	4

95. By arranging the trees cut in 1882-83 according to species, the following table has been obtained :—

Circle.	Sal.	Asna.	Sissu.	Deodar.	Other Conifers.	Oak.	Miscellaneous.	Total.
Central	1,922	1,686	...	...	6,262	453	16,175	25,898
Oudh	16,725	119	98	...	...	...	...	16,942
School	46	...	...	770	745	331	6	1,898
Total ...	18,693	1,205	98	770	7,007	784	16,181	44,738

96. The quantities of timber and of the other principal items of produce cut and collected by Government agency are as follow :—

Circle.	Timber.	Firewood.	Charcoal.	Bamboos.
	Cubic feet.	Maunds.	Maunds.	Number.
Central	174,393	92,900	8,066	1,156,039
Oudh	999,986	.....	66	.....
School	88,565	28,257	1,110	.....
Total in 1882-83	1,262,944	121,157	9,242	1,156,939
Total in 1881-82	702,701	180,587	9,159	1,248,985
Increase in 1882-83	560,243	.....	83	.....
Decrease „ „	.....	59,430	.....	92,046

A considerable increase has taken place in the departmental timber works, owing to a demand for railway sleepers, in consequence of which the Conservator of Forests in Oudh cut 14,287 crooked and otherwise inferior sal trees which were found unsuitable for long scantlings. Of this number, 8,712 trees were cut in Kheri, 4,581 in Gorakhpur, 987 in Bahraich, and 7 in Gonda.

97. The following table exhibits the principal items of material removed from the forests by consumers and purchasers :—

Circle.	Timber.	Firewood.	Charcoal.	Bamboos.
	Cubic feet.	Maunds.	Maunds.	Number.
Central	448,596	276,763	2,057	19,124,788
Oudh	248,778	318,464	32,172	232
School	284,883	230,993	818	1,852,460
Total ...	982,257	826,220	35,047	20,977,480

These data are only approximately correct.

98. The free grants of timber to villagers and others are as follow :—

	Cubic feet.
Central Circle	157,391
Oudh „	464,716
School „	585,208
Total ...	1,207,315

99. The subjoined table gives the Receipts and Charges of the three Circles during the year under review :—

Circle.	Receipts.	Charges.	Surplus or Deficit.	
			1882-83.	1881-82.
	Rs.	Rs.	Rs.	Rs.
Central	4,14,003	2,86,648	+1,27,355	+1,99,145
Oudh	3,84,430	2,88,707	+ 95,723	+ 86,639
School	2,14,970	2,63,670	— 48,700	—1,35,902
Total of 1882-83	10,13,403	8,39,025	+1,74,378	.....
Total of 1881-82	10,66,094	9,16,212	+1,49,882	.....
Increase in 1882-83	.....	.....	24,496	...
Decrease „ „	52,691	77,187	.....	...

The total financial results of the year are slightly more favourable than those of 1881-82, but they are not equal to those of former years. The falling off in the surplus which occurred during the year under review in the Central Circle seems to have been due to a reduction in the sales from depôt and of khair timber for sugar mills. In Oudh extensive sleeper operations were commenced, but they had not at the close of the year materially affected the surplus of that Circle. In the School Circle an improvement has been effected in so far that the deficit of Rs. 1,35,902 in 1881-82 has been reduced to Rs. 48,700 in 1882-83; but a lasting improvement cannot be expected until the ordinary working expenses in the Hill Divisions have been considerably reduced.

Generally speaking, it should not be overlooked that steel sleepers are steadily rising in estimation, and that consequently the demand for wooden sleepers is likely to fall off considerably, ere long. Under these circumstances the Department will probably do well to arrange the working of the forests so as to meet a steady local demand for timber and other forest produce, rather than an uncertain demand for railway sleepers.

Punjab.

100. The quantity of produce removed from the forests has considerably increased during the year under review, as will be seen from the following data :—

Description of produce.	1881-82.	1882-83	Increase.	Decrease.
Trees and poles ... ... No.	58,507	80,212	21,705	.....
Firewood ... ... C. ft. stacked	2,169,962	4,514,332	2,344,370	.....
Charcoal ... ... Mds.	18,872	9,759	...	9,113
Bamboos ... ... Pieces.	596,377	787,759	191,382	...
Coal ... ... Tons.	4,292	354	.....	3,938

The increase is chiefly due to the cutting of 3,277 dead or dying deodar trees in Chamba, to increased free grants in Kangra and Rawalpindi and to extensive removals of firewood by purchasers. The sales from Government depôts are also largely in excess of those of 1881-82, owing to considerable quantities of old timber having been brought down by exceptional floods, especially on the Jhelum River. The value of the timber thus received in depôts was, however, small. The important subject of bringing out long timber, and thus increasing the net receipts, is receiving attention. This matter was taken up as far back as 1880, and it seems due to the measures then taken that the average cubic contents per log extracted from the Bashahr forests have, during the last two years, risen from 12½ to 24½ cubic feet. The financial results in the future will in a great measure depend on the further steps which may be taken in this direction.

A fair beginning had been made in the working of the coal mines in the Salt Range, but the outturn has, during the year under review, fallen from 4,292 tons to 354 tons. This unsatisfactory result is believed to be due to the transfer of the working from the Forest Department to the Salt Department.

101. The imports of timber from foreign territory seem to have amounted to about the same quantities as in the previous year. There was an increase in the imports of 6,957 logs, but a decrease of 34,046 sleepers. The figures are as follow :—

Year.	Logs.	Sleepers.
1882-83	30,346	273,883
1881-82	23,389	307,929
Increase in 1882-83	6,957	....
Decrease in „	.....	34,046

102. The financial results of the last ten years are as follow :—

Year.	Receipts.	Charges.	Surplus.	Deficit
	Rs.	Rs.	Rs.	Rs.
1873-74	7,32,540	5,97,162	1,35,378	... ..
1874-75	8,34,874	6,46,480	1,88,394	. .
1875-76	9,05,742	5,54,226	3,51,516	... .
1876-77	5,98,754	5,22,483	76,271	..
1877-78	6,83,710	5,17,166	1,66,544	..
1878-79	5,00,620	5,23,554	... .	22,934
1879-80	6,49,819	4,80,676	1,69,143	... .
1880-81	6,71,079	4,95,368	1,76,311	...
1881-82	6,88,308	5,16,270	1,72,038	.. ..
1882-83	7,66,710	5,60,751	2,05,959	
Average	7,03,275	5,41,413	1,61,862	.....

It will be observed that the Charges have moved within narrow limits, while the Receipts have oscillated between 5 and 9 lakhs of rupees, causing considerable fluctuations in the Surplus. During the year under review the Receipts were Rs. 63,435 and the Surplus Rs. 44,097 above the average of the last ten years. The Surplus of 1882-83 is the highest which has been realized during the last seven years, but it is little more than one-half of the Surplus of 1875-76. On the whole, the financial results were least favourable in 1878-79, but a decided improvement took place in 1879-80. Since then the Surplus has risen slowly. During the year under review the financial results were specially favoured by exceptional floods in the Jhelum, and by the sale of very large quantities of fuel at the Changa Manga Plantation, representing the return of expenditure incurred in former years.

Central Provinces.

103. Only a comparatively small portion of the produce derived from the forests is removed by Government agency. During the year under review it represented 8 per cent. of the receipts of the Department, and the operations are practically restricted to the working of the Banjar Valley and Ahiri forests, which are the two best sal and teak forests in the Central Provinces. The cuttings in these are chiefly made with the view of improving the forests and bringing into the market material, much of which would otherwise not be made available. Very large quantities of forest produce are removed from the reserves by purchasers under various systems, but it has not been possible to give the quantities of timber and fuel in a uniform measure; it is hoped that an attempt will be made to do this in the Report for 1883-84.

104. As regards the methods of working the forests in the Central Provinces, the following extract from a Report on Forest Management in the Central Provinces, by the present Inspector-General of Forests, dated the 1st June 1883, may prove interesting:—

As the Government forests of the Central Provinces, though reserves under Chapter II of the Forest Act, have to supply not only public works and industrial enterprises, but also and chiefly the ordinary requirements of the people of the country, they are worked in a variety of ways to suit the demands made on them. On the whole, the methods of working may be brought under the following four heads:—

(1) Commutation.
(2) The license system.
(3) The kham tahsil system.
(4) Government agency.

It will be useful to explain shortly what each of these systems means.

1.—The System of Commutation.

Under this system is generally understood the payment of a fixed sum per annum, in return for which the payee may supply himself with certain classes of forest produce. The payment may be fixed—

(1) by the plough;
(2) by the house;
(3) by the land revenue; or
(4) by the income of the payee.

And, again, the payment may entitle the payee to the removal of—

(*a*) any forest produce required for domestic purposes;
(*b*) any forest produce, except timber or bamboos; or
(*c*) certain articles only.

Grazing is, as a rule, not included in commutation, but must be paid for separately, according to the number of cattle sent into the Government forest. In some cases each individual takes out a grazing license, in others arrangements are made for whole villages.

Ordinarily, commutation is not granted unless the whole village commutes; but in some cases this rule has been set aside. The commutation passes are issued either by the Forest Establishment or the tahsildars, or special vendors. According to the information supplied, the system is at present in force in the following districts:—Bhandara, Balaghat, Chanda,

Seoni, Saugor, Betul, Nimar, Chhindwara, Raipur, and Sambalpur. The details of the system and the rates payable differ according to districts. The rates per annum range from 2 annas to Rs. 2 per house or plough. In some cases restrictions are enforced as regards the quantity of each kind of produce which may be removed; in others no limit has been fixed beyond what is required for ordinary domestic purposes.

As an instance of the manner in which the system is worked, the following details referring to the Bhandara District may be given. The villages which are allowed to commute are those which are situated in close proximity to the forests. The people are divided into agriculturists and non-agriculturists, who pay at the following rates :—

Agriculturists—from 4 annas to Rs. 2 for each plough, according to circumstances.

Non-agriculturists—are assessed according to their income, and are divided into the following classes :—

			Rate.
		R.	Rs. A. P.
Class	I.—Incomes not exceeding	50 per annum	0 2 0
„	II.— „ „	150 „	0 6 0
„	III.— „ „	300 „	0 12 0
„	IV.— „ „	500 „	1 4 0
„	V.— „ exceeding „	500 „	2 0 0

The commutation licenses are for the official year, and they are issued by the Forest Establishment. They cover the removal of the following articles :—

(1) Firewood and dead leaves.
(2) Wood for fencing and for repairing houses.
(3) Wood for ploughs.
(4) Grass for thatching.
(5) Bamboos.

Firewood comprises the following articles :—

(*a*) dead or fallen timber of the unreserved kinds;
(*b*) branches of unreserved kinds of wood;
(*c*) brushwood, thorns, and undergrowth generally.

The following kinds of trees are reserved, and cannot be cut without the permission of the Deputy Commissioner (or the Forest Officer unders his orders) :—teak, blackwood, saj, sal, bija, mohwa, and achar.

On the whole, the system of commutation has been discouraged of late years, as it leads in many instances to waste of material. It is now considered a fairer arrangement that the people should pay according to the quantities which they remove, and this has led to the license system.

2.—The License System.

Any person requiring produce from a Government forest takes out a license before proceeding to the forest, for which he pays at certain rates fixed according to circumstances in different parts of the country. The rates are fixed per cart, head, or other load, or per quantity in maunds or cubic feet. They vary considerably in different parts of the province. The following are some of the rates in force in the Chanda District :—

Forest Produce.	For the Residents of the District.	For Outsiders.
	Per cart-load.	Per cart-load.
	Rs. A. P.	Rs. A. P.
Timber	0 4 0	3 0 0
Firewood	0 1 0	0 4 0
Bamboos	0 4 0	2 8 0
Grass	0 1 0	0 4 0
Grazing.	**Per head, annually.**	**Per head, annually.**
Buffalo	0 2 0	0 3 3
Bullock or cow	0 1 0	0 2 3
Sheep or goat	0 0 3	0 0 6

To make it as easy as possible for the people to obtain the licenses, they are sold by the Forest Establishment, Postmasters, Police Officers, Tahsil Establishments, School-masters, or private individuals duly authorized. The license vendors, except those belonging to the Forest Establishment, receive a commission on the sales. The licenses are either for fixed values or they are not. The former are of two classes: one gives the details of the produce and the other only the value; in the latter case the purchaser can remove under it any produce he chooses up to the value of the license. The licenses of no fixed value show the details of the produce which may be removed under them and the amount paid.

The license system has been much elaborated in the Central Provinces, as it is the most suitable method of disposing of the forest produce, and is at the same time fair to the consumer. In some cases the description of the produce is indicated by the colour of the paper on which the license is printed; in others the license is illustrated by a picture of the produce to which it has reference, as, for instance, a man carrying a head-load of grass or a bullock carrying a load, or a cart with two bullocks and laden with grass or timber, &c. In other cases the value is indicated by printing the *fac-simile* of the coin in question on the license; for instance, a four anna piece printed on a license indicates that four annas' worth of produce may be removed under it. And, again, in other instances the value is represented by stamps affixed to the license.

The objects of all these measures and devices are—

(1) to facilitate the purchase of the licenses,

(2) to prevent the purchasers being cheated, and

(3) to facilitate the control over the produce removed; the Forest Guards are, as a rule, not able to read or write, but they know the value and purport of the licenses by the colour of the paper, *fac-similes*, &c., indicated above.

3.—The Kham Tahsil System.

A modification, though by no means an improvement, of the license system is the kham tahsil system, under which the purchaser proceeds to the forest without let or hindrance, removes the produce he requires, and pays for it, on passing out of the forest, at one of a series of stations established on the main lines of export.

The kham tahsil system, if applied to forests which it is intended to maintain permanently, has serious drawbacks, which it is not necessary to explain here, as the system is in force in one forest only, the Moharli Reserve, and as it is not intended to extend it. There were special reasons why the system was applied to the Moharli Reserve. In the first place, the exports from it form as yet only a fraction of the possible yield, and the exporters do not cut the material, but they buy it from certain people living in forest villages in the reserve, who cut and prepare the produce for sale. When the demand on the reserve has sufficiently increased to approach its possible yield, a change in the system will be called for. In the meantime, it may be mentioned that the Ranger in charge of the reserve controls the Naka Establishment.

4.—General Remarks on these three Systems.

Considering the above-mentioned three systems generally, it will be noticed that they in themselves put very little restriction on the manner in which the forests are used by the people. In order to maintain and improve the areas, certain restrictions are, however, enforced. It has been shown in a previous chapter that the area of the Government forests on the 1st April 1882 stood as follows:—

	Area, in square miles.
First-class reserves	2,[illegible]
Second „	16,842
Total ...	19,430
Add unreserved forests	289
Grand Total ...	19,719

In the first-class reserves certain blocks only are opened for the exercise of the commutation, license, and kham tahsil systems, while the others are under reproduction or special improvement. In some instances certain inferior species may be cut anywhere in a first-class reserve; but care is taken to give this permission only where it is not likely to lead to damage. And even in the open blocks valuable species—like teak, sal, bija, saj, blackwood, and others—may only be cut with the special sanction of the Divisional Forest Officer. Bamboos are, on the other hand, so abundant in most first-class reserves (certain areas in the northern part of the province excepted) that no restrictions regarding their removal have as yet been enforced. As the demand increases, it will, no doubt, be found necessary to work even bamboo forests by rotation, so as to ensure the continued production of good healthy shoots.

In the second-class reserves working by rotation has been attempted by opening certain blocks for cutting and by closing others. This, however, refers only to a small part of the area (Seoni and Saugor Districts). The ordinary restriction which has been enforced consists in

the prohibition to cut the more valuable species, varying in number according to circumstances, without the previous sanction of the Divisional Forest Officer, or the Deputy Commissioner, as the case may be. With this simple restriction, the second-class reserves, it is believed, have not deteriorated since they were taken under protection; on the contrary, in many instances, they have even improved; but in the same degree as the Malguzari forests disappear or are reduced in yielding power, and the demand on the Government forests increases, it will be necessary to introduce additional conservancy measures. The second-class reserves will, similar to the method now followed in some of the first-class reserves, have to be divided into blocks, of which some are open for cutting, while others are closed for reproduction and improvement, until, in fact, all difference between first and second-class reserves disappears.

105. The financial results of the year are as follow:—

Class of Forests.	Receipts.	Charges.	Surplus.	
			Total.	Per square mile of Forest
	Rs.	Rs.	Rs.	Rs.
First Class Reserves	1,87,130	1,78,879	8,251	3
Second „	7,90,517	2,33,369	557,148	33
Total of 1882-83... ...	9,77,647	4,12,248	5,65,399	29
Total of 1881-82... ...	11,72,884	4,07,013	6,75,871	35
Decrease in 1882-83	1,95,237	84,765	1,10,472	6

The falling off under both Receipts and Charges is due to a reduction of the departmental timber operations. Apart from these, the Receipts have actually increased, while the Charges are about the same as in the previous year. Although the total results do not compare favourably with those of 1881-82, the Surplus is slightly higher than the average of the last five years, and in so far the results are not unsatisfactory.

British Burma.

106. The number of trees girdled during the year is as follows:—

Circle	Teak			Other Trees.
	Inside Reserves.	Outside Reserves.	Total	
Pegu	3,690	11,294	14,984	2,657
Tenasserim	1,021	1,591	2,612	3,538
Total ...	4,711	12,885	17,596	6,195

The number of teak trees girdled is 1,596 in excess of Mr. Brandis's forecast, the whole excess having occurred in the Tenasserim Circle. Sanction was given to girdle 2,500 trees outside reserves in that Circle, but, owing to a mistake on the part of the Officer entrusted with the work, 1,021 of the trees killed were standing inside the Mithawé Reserve.

It does not appear desirable to exceed Mr. Brandis's forecast until the formation and demarcation of the principal reserves in both circles have been completed, and until considerable progress in the survey and preparation of working-plans has conclusively shown that the annual yield may safely be

increased with due consideration of the fact that the forests in British Burma must ultimately be in a fit condition to make up for the reduction in imports from foreign States, which is sure to set in at no distant date.

107. The yield of the forests is given as follows:—

	Timber extracted, in Tons.		
	Teak.	Other timber.	Total.
By Government agency	40,272	8,440	48,712
By purchasers and under trade permits	3,642	32,904	36,546
Under free grants	85	8,079	8,164
By lease-holders and others	4,327	748	5,075
Total ...	48,326	50,171	98,497
Outturn of 1881-82	31,246	87,171	118,417
Increase in 1882-83	17,080	.. ...	.....
Decrease in „	.....	37,000	19,920

There has been an increase of 55 per cent. in the outturn of teak and a reduction of 42 per cent. in that of other woods, or a falling off in the total outturn of 17 per cent. These large fluctuations have not been satisfactorily explained in the Reports. If the high rates ruling during the year stimulated the extraction of teak, it is not understood why the extraction of other timber should at the same time have fallen off.

108. As far as can be gathered from the Reports, the following quantities of timber were imported and exported during the past two years:—

Year.	Timber imported.	Timber exported.
1881-82	154,290 tons.	133,751 tons.
1882-83	140,604 „ and 58,876 pieces.	151,151 „

There has apparently been an increase in both imports and exports. The value of the exports is estimated at Rs. 1,40,46,610.

109. The financial results of the year compare as follow with those of the previous year:—

Year	Receipts.	Charges.	Surplus.	Proportion of Surplus to Receipts, in per cent.
	Rs.	Rs.	Rs.	Rs.
1882-83	25,03,894	12,28,959	12,74,935	51
1881-82	22,31,804	11,50,222	10,81,582	48
Increase in 1882-83	2,72,090	78,737	1,93,353	.....

These results are very satisfactory, especially if it is remembered that the reduction of the duty on foreign timber, from 7 per cent. to 1 per cent. and subsequently to one-half per cent. *ad valorem*, represents a loss of revenue amounting to Rs. 2,63,504. The large receipts are to a considerable extent due to the high price of teak prevailing during the year.

Assam.

110. The departmental operations have now been reduced to the extraction of the material which is required for the use of the department. During the year under review 219 trees were cut departmentally against 378 in the previous year. It is expected that all the stocks now remaining in depôts will be sold before the close of 1883-84.

111. As far as can be gathered from the Report, the following trees have been removed by purchasers from the forests in the Assam Valley Districts, including the Khasi and Jaintia Hills :—

	Sal.	Other Reserved trees	Unreserved trees.	Total.
From Reserved Forests	9,343	636	669	10,648
„ Protected and District Forests	2,659	1,790	2,556	7,005
Total ...	12,002	2,426	3,225	17,653

In addition, certain quantities of poles, boats, and fuel have been removed, but they are given in various measures. Future Reports should give an estimate of the total quantities of wood removed from the reserved forests, and, as far as they can be ascertained, those removed from the protected and district forests.

The following quantities of timber were removed by purchasers from the Cachar forests :—

	Pieces.	Cubic feet.
In 1882-83	22,925	605,280
„ 1881-82	15,888	422,219

These figures show a considerable increase during the year under review. The quantities removed from the Sylhet forests have not been given.

It is reported that 20,417 trees, representing a value of Rs. 88,538, were made over free of charge to the Assam Railway and Trading Company under the concession granted to them.

112. The revenue realized by the sale of timber on new grants of waste land is as follows :—

Year.	Area of Land allotted for Cultivation.	Amount of Forest Revenue realized or due	
		Total.	Per acre.
	Acres.	Rs.	Rs. A. P.
1882-83	4,246	7,438	1 12 0
1881-82	736	662	0 14 4

These data seem to indicate fresh activity in the tea industry.

113. The rubber mahals in British territory were sold for Rs. 32,792. The quantity of rubber collected cannot be given with any degree of accuracy, but it is roughly estimated at 4,178 maunds. If this should be approximately correct, Government would receive only about Rs. 8 for every maund of rubber.

An experiment has been made in the Balipara Reserve (Darrang and Nowgong Division) of tapping 50 full-sized rubber trees, with the view of ascertaining their yield under systematic management. These trees seem to have yielded during the first year on an average about 4½ seers of dry rubber per tree, which realized Rs. 5-13-1, after deducting all expenses of collecting the rubber. The results of the further tapping of these trees will be expected with interest. If the trees should be found to stand similar tappings regularly, the Balipara rubber planation will doubtless prove a remunerative investment.

The imports and exports of rubber, as far as they can be given, were as follow :—.

	1882-83. Mds.	1881-82. Mds.
Imports	4,586	2,840
Exports	10,766	9,026

114. The Forest Department of Assam was separated from that of Bengal in 1873-74. Since then the financial results have been as follow :—

Year.	Receipts.	Charges.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
1873-74	62,726	50,622	12,104	.....
1874-75	64,749	59,523	5,226	.....
1875-76	1,07,302	61,884	45,418	.....
1876-77	81,568	89,920	.....	8,352
1877-78	1,34,326	1,00,287	34,039	.....
Average of first 5 years	90,134	72,447	17,687	.....
1878-79	1,61,779	1,26,027	35,752	.....
1879-80	1,64,336	1,32,830	31,506	.....
1880-81	1,68,997	1,42,725	26,272	.....
1881-82	1,66,053	1,65,361	692	... ..
1882-83	2,48,605	1,71,823	76,782	.....
Average of second 5 years	1,81,954	1,47,753	34,201	.....
Average of 10 years	1,36,044	1,10,100	25,944	.....

Taking into consideration the special difficulties against which the Department has had to contend during the first ten years of its existence, these results are certainly not unsatisfactory. The demand for forest produce is as yet considerably below the quantity which the forests can permanently yield, and, as it increases with the progress of cultivation, the Assam forest reserves will doubtless prove to be valuable Government estates.

Coorg.

115. The number of timber trees felled departmentally during the last two years is as follows :—

	Teak.	Others.	Total.
In 1882-83	494	1,186	1,680
„ 1881-82	808	741	1,549

The number of sandalwood trees cut during the year 1882-83 is 1,528.

116. The following quantities of timber were received in, and sold from, depôts :—

Year.	Timber, in Cubic Feet.				
	Brought to Depôts.			Sold in Depôts.	Sold locally.
	Teak.	Others.	Total.		
1882-83	15,972	17,988	33,960	40,388	483
1881-82	23,404	16,407	39,811	28,966	359

In addition to the above, a quantity of small pieces, bamboos, and fuel was brought to depôts and sold. On the whole, the operations were conducted on about the same scale during the two years.

The quantities of produce removed from the forests by purchasers were small, and the Deputy Conservator does not, for the present, expect any special increase in them.

117. The sandalwood operations, compared with those of previous years, are as follow:—

Year.	Amount brought to Depôts, in Tons.	Sold during the Year.		
		Number of tons.	Amount realized.	
			Total.	Per ton.
			Rs.	Rs.
1880-81	118½	112½	34,324	305
1881-82	126¾	60¾	14,059	231
1882-83	117⅓	102¼	77,407	403
Total ...	362½	365½	1,25,790	344

Considerable fluctuations have occurred in the sales, according to the state of the market; but the total quantity sold during the last three years is almost the same as that brought to depôts, and the average outturn is very near the estimate of 120 tons per annum. The price per ton, which fell considerably during the previous three years, is now almost as high again as it was four years ago.

118. The financial results are as follow:—

Year.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1882-83	1,38,022	64,782	73,240
1881-82	1,00,364	59,858	40,506
Increase in 1882-83	37,658	4,924	32,734

The year under review shows a marked increase in both the gross and net revenue—an improvement which is due to the increased sales of sandalwood and the higher rates obtained for it. The receipts from the sale of timber are as yet small, and, with the view of increasing them, it is proposed to construct a tramway from Hunsur to the Naikeri and Hatgatnad forests.

Ajmere.

119. The financial results of the year, compared with those of 1881-82, are as follow:—

Year.	Receipts.	Charges.	Deficit.
	Rs.	Rs.	Rs.
1882-83	7,126	11,284	4,158
1881-82	4,066	13,954	9,888
Increase in 1882-83	3,060	.....	.....
Decrease in „	.....	2,670	5,730

The receipts were increased and the charges were less, hence a reduction of Rs. 5,730 in the deficit.

The receipts were derived from the following sources :—

	1882-83.	1881-82.
	Rs.	Rs.
Firewood and charcoal	2,472	669
Bamboos	66	.....
Grazing and grass	3,720	1,755
Minor produce	242	161
Miscellaneous	626	1,481
Total ...	7,126	4,066

On the whole, the receipts are gradually rising, and it is expected that they will, a few years hence, equal the charges.

Berar.

120. The financial results of the year, arranged according to the different classes of forests, are as follow :—

Class of Forest.	Receipts.	Charges.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
State Reserves	41,899	62,675	.....	20,776
District „	8,423	25,748	.....	17,325
Unreserved Forests	2,36,721	61,609	1,75,112	.....
Total ...	2,87,043	1,50,032	1,37,011	.....

The deficit of the State Reseves is only one-half of what it was in 1881-82, and the Conservator hopes to see it soon disappear altogether. The deficit of the District Reserves is also less than it was in 1881-82.

121. The totals of receipts and charges compare as follow with those of previous years :—

Year.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1878-79	2,85,670	1,07,350	1,78,320
1879-80	3,07,501	1,10,514	1,96,987
1880-81	2,66,556	1,28,969	1,37,587
1881-82	2,33,511	1,52,985	80,526
1882-83	2,87,043	1,50,032	1,37,011

After a considerable decline of the balance sheet during several years, a decided improvement has been effected during the year under review, the receipts having increased by Rs. 53,532, while the expenditure has, at the same time, been reduced by Rs. 2,953.

Madras.

122. The financial results of the year are as follow :—

Circle.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
Northern	3,91,298	2,53,925	1,37,373
Southern	5,15,144	3,90,940	1,24,204
Total of 1882-83	9,06,442	6,44,865	2,61,577
Total of 1881-82 ...	8,06,024	6,03,106	2,02,918
Increase in 1882-83	1,00,418	41,759	58,659

The receipts are almost the same as those estimated in the forecast prepared by Mr. Brandis and Major Campbell Walker, while the charges are considerably lower. The receipts and charges are now altogether provincial, but it is satisfactory to notice that the balance sheet shows a fair surplus. It is hoped that the departmental finance will be administered on the same principle in future years, as it is desirable that the receipts should ordinarily show a fair margin of profit after deducting the charges of the Department.

Bombay.

123. The financial results of the year, compared with those of 1881-82, are as follow :—

Circle.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
Northern	9,13,531	5,37,124	3,76,407
Southern	7,33,058	4,09,970	3,23,088
Sind	4,43,764	3,10,665	1,33,099
Total in 1882-83	20,90,353	12,57,759	8,32,594
Total in 1881-82	18,28,089	11,48,458	6,79,631
Increase in 1882-83	2,62,264	1,09,301	1,52,963

The increase in the receipts was due to a considerably larger demand for forest produce generally in the Northern and Southern Circles and to enhanced sales of railway fuel in Sind.

Export of Forest Produce.

124. The following statement shows the quantities of forest produce exported from India during the year :—

Articles.	Quantity, in Tons of 20 Cwt.; in the case of Teak, 50 Cubic Feet.		Valuation at Port of Shipment in 1882-83.	
	Average of five years, 1877-78 to 1881-82.	In 1882-83.	Total.	Per ton.
			Rs	Rs.
1. Caoutchouc	572	528	12,59,165	2,385
2. Shell-lac	3,402	5,143	55,47,619	1,079
3. Lac-dye	429	196	46,104	235
4. Sandalwood, ebony, and other ornamental woods	.....	(Not known)	4,07,037	(Not known)
5. Cutch and gambier	11,484	12,325	30,52,434	248
6. Myrabolans	21,405	23,558	18,46,076	78
7. Teak	51,079	59,187	61,12,597	103
Total in 1882-83	.....	.....	1,82,71,932	.....
Total in 1881-82	.....	.....	1,62,46,269	.....
Increase in 1882-83	.....	.....	20,25,663	.....

These data show an increase under every head except caoutchouc and lac-dye. The total value is upwards of twenty lakhs of rupees in excess of that of the previous year.

Summary of the Revenue and Expenditure of the Forest

Budget Heads.	Bengal Presidency (British Territories).									
	Bengal.	North-Western Provinces and Oudh.	Punjab.	Central Provinces	British Burma	Assam.	Coorg.	Ajmere.	Baluchistan.	Forest Survey
RECEIPTS.	Rs	Rs.	Rs.	Rs	Rs	Rs	Rs	Rs.	Rs.	Rs.
I.—Timber and other produce removed from the forests by Government agency.	1,57,082	4,22,758	3,54,931	75,063	20,23,913	17,534	1,06,222	217	4,644	.
II.—Timber and other produce removed from the forests by consumers or purchasers.	5,02,082	5,59,639	3,32,665	8,69,066	2,55,350	2,20,316	24,974	6,283	305	.....
III.—Confiscated drift and waif wood.	6,022	8,779	37,599	4,536	1,28,224	2,705	.....	1	.....	.....
IV.—Revenue from forests not managed by Government.	.....	7,120	23,541	9,728	69,373	5,343	.....	.....	.....	.....
V.—Miscellaneous ...	28,173	15,107	17,974	19,254	27,094	2,647	6,826	625	30	348
Total Receipts .	6,93,959	10,13,403	7,66,710	9,77,647	25 03,894	2,48,605	1,38,022	7,126	5,039	348
EXPENDITURE.										
A.—Conservancy and Works.										
I.—Timber and other produce removed from the forests by Government agency.	93,122	3,04,774	1,05,258	38,629	7,71,340	90	12,502	48	2,708	.....
II.—Timber and other produce removed from the forests by consumers or purchasers	26,508	33,653	1,326	1,57,413	6,684	5,622	.....	108	.....	.....
III.—Confiscated drift and waif wood	1,219	580	18,442	177	56,485	129	.....	.....	.....	.....
IV.—Revenue from forests not managed by Government.	.....	930	17,813	.....	.....	.....	.....	...	.....	.....
V.—Rent of leased forests, and payments to shareholders in forests managed by Government.	.....	12,826	36,740	251	.....	.....	.....	.....	.....	.....
VI.—Live and dead stock	10,143	22,302	4,576	8,096	41,422	9,476	1,955	180	50	3,185
VII.—Communications and buildings.	19,604	1,06,182	15,157	7,000	27,121	17,273	1,338	610	...	.....
VIII.—Demarcation, improvement, and extension of forests.	48,788	65,165	52,885	23,644	55,667	30,762	18,253	2,734	280	6,425
IX.—Miscellaneous ..	6,178	10,393	1,360	4,335	15,028	2,701	1,600	9	.....	...
Total Conservancy and Works.	2,05,562	5,56,805	2,83,557	2,35,545	9,73,747	75,929	35,648	3,689	3,098	9,860
B.—Establishments.										
I —Salaries	1,50,623	2,35,510	2,28,919	1,48,696	2,10,581	79,389	23,018	6,257	6,332	26,602
II Travelling allowances.	19,444	32,767	33,435	16,420	30,594	13,213	5,254	963	1,823	4,194
III.—Contingencies	6,555	13,943	14,840	11,578	14,097	3 292	862	375	108	1,239
Total Establishments .	1,76,622	2,82,220	2,77,194	1,76,703	2,55,212	95,894	29,134	7,595	8,863	32,035
Grand Total of Expenditure	3,82,184	8,39,025	5,60,751	4,12,248	12,28,959	1,71,823	64,782	11,284	11,961	41,595
SURPLUS ...	3,11,775	1,74,378	2,05,959	5,65,399	12,74,935	76,782	73,240			
DEFICIT ...	.....	.	... .	.....	. ...	...		4,158	6,922	41,247

MENT I.

Department in India for the year 1882-83.

Total Bengal Presidency (British Territories).	Madras.	Bombay.	Total British Provinces.	Berar.	Grand Total.	Budget Heads.
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	RECEIPTS.
31,62,964	3,31,660	12,33,596	47,28,220	5,117	47,33,337	I.—Timber and other produce removed from the forests by Government agency.
27,70,740	5,40,881	7,38,908	40,50,529	2,78,135	43,28,664	II.—Timber and other produce removed from the forests by consumers or purchasers.
1,87,026	11,108	11,336	2,10,370	2,030	2,12,400	III.—Confiscated drift and waif wood.
1,15,105	.....	53,607	1,68,712	.....	1,68,712	IV.—Revenue from forests not managed by Government.
1,18,018	22,793	52,906	1,93,717	1,761	1,95,478	V.—Miscellaneous.
63,54,753	9,06,442	20,90,353	93,51,548	2,87,043	96,38,591	Total Receipts.
						EXPENDITURE.
						A.—Conservancy and Works.
13,50,407	1,01,061	4,[illegible]523	19,53,991	678	19,54,669	I.—Timber and other produce removed from the forests by Government agency.
2,31,314	14,406	25,351	2,71,071	10,437	2,81,508	II.—Timber and other produce removed from the forests by consumers or purchasers.
77,032	1,872	522	79,426	.....	79,426	III.—Confiscated drift and waif wood.
18,743	.....	4,925	23,668	.....	23,668	IV.—Revenue from forests not managed by Government.
49,817	10,835	16,158	76,810	17,120	93,930	V.—Rent of leased forests and payments to shareholders in forests managed by Government.
1,01,335	7,004	3,913	1,12,342	3,772	1,16,114	VI.—Live and dead stock.
1,90,285	5,945	32,071	2,28,301	8,781	2,37,082	VII.—Communications and buildings.
3,13,603	1,62,984	2,33,592	7,10,179	14,101	7,24,280	VIII.—Demarcation, improvement, and extension of forests.
41,004	5,004	9,050	56,258	3,996	60 254	IX.—Miscellaneous.
23,83,140	3,09,801	8,19,105	35,12,046	58,885	35,70,931	Total Conservancy and Works.
						B.—Establishments.
11,16,527	2,67,851	3,29,963	17,14,341	77,437	17,91,778	I.—Salaries
1,58,056	51,380	83,002	2,92,438	7,944	3,00,382	II.—Travelling allowances.
66,889	15,833	25,689	1,08,411	5,766	1.14.177	III.—Contingencies
13,41,472	3,35,064	4,38,654	21,15,190	91,147	22,06,337	Total Establishments.
37,24,612	6,44,865	12,57,759	56,27,236	1,50,032	57,77,268	Grand Total of Expenditure
26,30,141	2,61,577	8,32,594	37,24,312	1,37,011	38,61,323	SURPLUS
						DEFICIT

STATEMENT II.

Financial Results of Forest Administration for the year 1882-83.

Province.	Timber and other Produce removed from the Forests by Government Agency.			Other Revenue.			* Formation, Protection, and Improvement of Forests.
	Receipts.	Charges.	Surplus or Deficit.	Receipts.	Charges.	Surplus or Deficit.	Charges.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	1,58,131	1,41,337	16,794	5,35,828	1,06,458	4,29,370	1,34,389
North-Western Provinces and Oudh.	4,23,662	4,36,841	—13,179	5,89,741	1,55,899	4,33,842	2,46,285
Punjab	3,92,530	2,85,123	1,07,407	3,74,180	1,14,039	2,60,141	1,61,589
Central Provinces ...	75,062	53,711	21,351	9,02,585	2,21,262	6,81,323	1,37,275
British Burma ...	21,50,827	9,80,942	11,69,885	3,53,067	90,434	2,62,633	1,57,583
Assam	20,298	1,093	19,205	2,28,307	58,639	1,69,668	1,12,091
Coorg	1,06,222	24,186	82,036	31,800	6,623	25,177	33,973
Ajmere*	218	48	170	6,908	2,108	4,800	9,128
Bilochistan	4,644	7,225	—2,581	395	2,216	—1,821	2,520
Forest Survey* ...	...	...	...	348	...	348	41,595
Total ...	33,31,594	19,30,506	14,01,088	30,23,159	7,57,678	22,65,481	10,36,428
Berar	5,117	678	4,439	2,81,926	1,02,686	1,79,240	46,668
Total Bengal Presidency ...	33,36,711	19,31,184	14,05,527	33,05,085	8,60,364	24,44,721	10,83,096
Madras				Data not available.			
Bombay				Data not available.			
Grand Total ...	...	...	...	...	...	...	...

* These data have been prepared in the Inspector-General's Office; they are only approximately correct.

STATEMENT III.

Receipts, Charges, and Surplus of the Forest Department throughout India during the nineteen years from 1864-65 to 1882-83.

(Arranged in periods of three years.)

STATE

Receipts, Charges, and Surplus of the Forest Department throughout

(Arranged in periods

Provinces.	RECEIPTS.							CHAR			
	1864-67. Average.	1867-70. Average.	1870-73. Average.	1873-76. Average.	1876-79. Average.	1879-82. Average.	1882-83.	1864-67. Average.	1867-70. Average.	1870-73. Average.	1873-76 Average.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	44,569	1,37,995	1,36,206	1,66,947	3,54,884	5,48,199	6,93,959	49,559	1,29,245	98,137	1,07,992
North-Western Provinces and Oudh.	7,47,738	7,31,977	11,78,424	15,20,130	11,60,178	10,16,096	10,13,403	3,99,475	4,70,887	10,11,753	9,87,657
Punjab	2,45,063	3,39,531	8,09,455	8,24,385	5,94,361	6,69,935	7,66,710	2,58,164	4,32,201	9,11,741	5,99,289
Central Provinces ..	2,19,682	3,72,016	5,20,186	6,51,827	7,32,699	10,09,915	9,77,647	2,12,971	3,27,000	2,62,317	3,16,186
British Burma ...	7,52,972	8,16,178	8,05,997	13,07,481	14,30,684	16,42,869	25,03,894	2,86,815	3,90,674	3,71,737	6,50,640
Assam	Included in Bengal.			76,259	1,25,891	1,66,462	2,48,605	Included in Bengal.			57,343
Coorg	80,803	86,782	83,648	91,849	76,321	96,069	1,38,022	11,030	21,174	28,415	36,796
Ajmere	...	...	24	374	1,716	2,350	7,126	...	...	13,055	26,084
Biluchistan ..	...	...	...	...	...	16,496	5,039	...	...	..	...
Forest Survey ...	..		...	...	63	103	348	...	...	21,178	56,928
Total Bengal Presidency.	20,90,847	24,84,470	35,42,940	46,41,252	44,76,797	51,69,004	63,54,753	11,18,012	17,71,271	27,18,333	28,38,915
Madras	3,25,530	4,37,051	3,92,470	4,18,293	4,01,02[illegible]	4,58,300	9,06,442	2,20,237	2,81,808	3,72,908	3,93,713
Bombay ...	9,66,363	11,10,995	11,58,013	12,20,252	12,23,360	16,25,203	20,90,353	6,50,183	5,73,019	6,40,100	7,66,711
Total British Provinces.	33,82,740	40,32,525	50,93,423	62,79,797	61,01,214	72,52,397	93,51,548	19,88,432	26,26,098	37,31,431	39,99,339
Berar ...	20,349	94,494	1,07,578	2,52,249	2,72,679	2,69,189	2,87,043	7,729	44,385	88,619	89,301
Grand Total ...	34,03,089	41,27,019	52,01,001	65,32,046	63,73,893	75,21,586	96,38,591	19,96,161	26,70,483	38,20,050	40,88,640

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MENT III.

India during the nineteen years from 1864-65 to 1882-83.

of three years.)

GES			SURPLUS							
1876-79 Average	1879-82 Average	1882-83	1864-67 Average	1867-70 Average.	1870-73 Average	1873-76 Average	1876-79 Average	1879-82 Average	1882-83	Provinces.
Rs	Rs	Rs	Rs	Rs	Rs	Rs.	Rs.	Rs.	Rs.	
2,70,624	3,35,246	3,82,184	— 4,990	8,750	38,069	58,955	84,360	2,12,953	3,11,775	Bengal
7,99,484	7,70,793	8,39,025	3,48,269	2 61,090	1,66,671	5,32,473	3,60,694	2,45,303	1,74,378	North-Western Provinces an Oudh.
5,21,068	4,97,438	5,60,751	— 13,081	— 92,700	—1,02,286	2,25,096	73,293	1,72,497	2,05,959	Punjab
3,33,344	5,05,033	4,12,248	1,06,711	45,016	2,66,869	3,35,641	3,99,355	5,04,882	3,65,399	Central Provinces.
8,59,754	8,72,093	12,28,959	4,66 159	4,25,504	4,34,260	6,56,841	5,70,930	7,70,776	12,74,935	British Burma
1,05,411	1,46,972	1,71,823	In	cluded in	Bengal	20,916	20,480	19,490	76,782	Assam.
34,808	57,170	64,782	69,773	65,608	55,233	55,053	41,513	39,499	73,240	Coorg.
16,643	13,376	11,284	..	.	— 13,031	— 25,710	— 15,227	— 11,026	— 4,158	Ajmere
	17,048	11,961		...			...	— 552	— 6,922	Baluchistan
50,170	43,234	41 595	.	..	— 21,178	— 56,928	— 59,116	— 43,131	— 41,247	Forest Survey
30,00,515	32,58,403	37,24,612	9,72,835	7,13,208	8,24,607	18,02,337	14,76,282	19,10,691	26,30,141	Total Bengal Presidency
3,70,422	3,74,806	6,44,865	1,05,293	1,55,243	19,562	24,580	21,675	83,2..	2,61,577	Madras
8,96,016	11,06,622	12,57,759	916,180	5,37,976	5,17,823	4,53,541	3,27,344	5,18,781	7,32,701	Bombay.
42,75,953	47,39,831	56,27,236	13,94,308	14,06,427	13,61,992	22,80,458	18,25,261	25,12,506	37,24,312	Total British Provinces
1,03,980	1,30,823	1,50,032	12,620	50,109	1,08,969	1,62,948	1,68,689	1,38,366	1,37,011	Berar.
43,79,943	48,70,654	57,77 268	14,06,928	14,56,536	14,70,951	24,43,406	19,93,950	26,50,932	38 61,323	Grand Total.

REVIEW

OF

FOREST ADMINISTRATION

IN

BRITISH INDIA,

FOR THE YEAR

1883-84.

BY

B. RIBBENTROP, Esq.,

OFFICIATING INSPECTOR GENERAL OF FORESTS TO THE GOVERNMENT OF INDIA.

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INTRODUCTION

Summary of Progress from 1879 to 1884.

ALTHOUGH the Inspector General of Forests to the Government of India issues Annual Reviews, bringing together, in a concise form, the results of Forest Administration in each year, it will be useful to recapitulate once every five years the principal measures which have occupied the attention of the Government of India during that period. It is proposed to do this in the following paragraphs.

2. The Forest Department is one of the branches of business made over to the Home Secretary, and is in charge of the Member of Council who holds the portfolio of the Home and the Revenue and Agricultural Departments. The Inspector General of Forests, besides acting as professional adviser of the Government in all Forest matters, fulfils the functions of Under Secretary in the Home Department, submitting cases direct to the Secretary. The Members in charge of Forest work since 1880 have been the Honourable Mr. (now Sir) Rivers Thompson up to the 9th May 1882, and the Honourable Sir S. C. Bayley from that date to the present time. For the past three years the Inspector General has been Dr. W. Schlich, who has recently been deputed to England in connection with the establishment of a Forest School at Cooper's Hill. His predecessor was Dr. D. Brandis, C.I.E., the founder of systematic Forestry in India, whose labours in the cause of Forestry in India must always command the grateful remembrance of Government.

3. As pointed out in the Review for 1882-83, the most remarkable feature in Indian Forest Administration, during the last five years, has been the rapid increase of the Revenue. Five years ago it amounted to 71 lakhs of rupees, and now it has risen to 108 lakhs. This is, in some measure, an indication of the increasing demand on the Government forests, which is chiefly due to the destruction of private forests, brought about by the extension of railway communication, and the increasing prosperity of the country. The private forests have for a number of years past, and it may be said since the occupation of India by the British (which event was synchronous with the springing up of an increased demand), been steadily reduced by indiscriminate fellings without regard to reproduction. In some cases the object was to clear the ground for cultivation, and in others to satisfy an ever-increasing demand for forest produce. Where railways have been constructed, the forests have rapidly disappeared, not only to make room for the march of civilisation, but also to supply the large requirements of the lines. Taking into consideration the special impetus which has lately been given to the construction of additional railways, the final destruction of most private forests within a reasonable distance from them may safely be predicted. The result of this change is that the requirements for forest produce, which were formerly chiefly satisfied from private domains, must, in an ever-increasing proportion, be obtained from the Government lands. These circumstances naturally demand special attention, and steps have had to be taken to counteract, as far as lies in the power of Government, the effects of this indiscriminate destruction of forests in all the more advanced districts.

4. In a country like India it is absolutely necessary that a certain portion of the land shall always remain under forest. It is not possible to ascertain the actual proportion so covered at present, but the necessary forest area may be put down as not less than one-fourth of the total area. It is also

necessary that the forest area should be distributed over the country in a suitable manner. The total area of British India may be taken as about 867,000 square miles. The area over which the Indian Forest Department exercises control is as follows:—

	Square miles.
Reserved Forests	48,765
Protected „	8,585
District „	16,862
Total ...	74,212

The area of District Forests in Madras, Bombay, Burma, Coorg, and Ajmere is not known at present, but it is presumed that, by adding this to the above, the total area over which the authority of the Department now extends may be put down at 100,000 square miles. This represents less than one-half of the minimum forest area which may be said to be necessary for the well-being of the country. Moreover, the control over about one-half of the above-mentioned area is, for various reasons, of a very limited nature, so that barely 50,000 square miles, or about one-fourth of the required area, can be considered as under real forest conservancy. It follows that, if complete protection is to be given to the country against future dearth of forest produce, either the area of Government lands under actual forest management must be very considerably increased; or laws must be passed which permit a certain interference with private forests; or recourse must eventually be had to both of these measures.

5. Every effort has been made during the last five years to increase the areas under conservancy, and to provide for their better and closer management. Forest laws have been passed, the organization improved, the staff reorganized, the training of superior and subordinate establishments considerably advanced, and steps have been taken towards the systematic preparation of Forest Working Plans, which will ensure not only the most advantageous method of working the forests with due consideration of the requirements of the people, but also enable Government to follow the working at every step, so as to render the estates an everlasting and increasing benefit to the general community.

Forest Legislation.

6. A general Indian Forest Act was passed in 1878, which provides for the preservation and management of the forests, the control of forest produce in transit, and the duty leviable on timber. It has been extended to all British Indian provinces, except Madras, Burma, the Hazara District in the Punjab, Ajmere, Coorg, Berar, and Biluchistan. For Ajmere and the Hazara District special Regulations are in existence. Forest legislation for Burma, Madras, Coorg, and Berar has occupied the attention of the Government of India during the last five years. An Act for Burma was passed in 1881, and one for Madras in 1882, while a Forest Regulation for Berar is under consideration. The authorities in Coorg are now considering whether to introduce into that province the Indian or the Madras Forest Act.

7. It may be asked why special legislation was necessary for a few provinces, which the general Indian Forest Act sufficed for all the others. As a matter of fact, these separate enactments are more the result of circumstances than of necessity. There is no reason whatever why one General Act should not do for all provinces; but owing to certain defects in the Act of 1878, the Chief Commissioner of British Burma declined to extend it to that province, and the Government of Madras held that its provisions could not be applied to the Southern Presidency, for reasons which will be explained further on; while in Berar certain forest rules existed, which obviated the necessity of immediate legislation for that province.

8. The Burma and Madras Acts proceed on the same general lines as the Indian Act, but, besides certain minor improvements, they differ on this important point, that the general Indian Act recognises two different classes of State Forests,—Reserved and Protected Forests,—while the later enactments recognise only one class.

9. When the Indian Forest Act of 1878 was first drafted, it was intended to create only one class of demarcated State Forests, *viz.*, Reserved Forests, originally so called because the areas were reserved from cultivation; but as their formation would take time, provision was also made for the protection of the Government forest areas generally, until it could be decided what areas should be maintained permanently as forests by constituting them demarcated or reserved forest. In passing the Bill through Committee in the Legislative Department considerable changes were introduced, which ended in providing for the constitution of—

(*a*) Reserved Forests (Chapter II. of the Act); and

(*b*) Protected Forests (Chapter IV. of the Act).

Chapter II provides for the demarcation of reserves, and for enquiry into, and the record and regulation of rights; it prevents the springing up of new rights except under the orders of Government; and arranges for the protection of the areas. In a word, Chapter II. provides the proper means for the constitution and maintenance of permanent forest estates, in an efficient and business-like manner.

10. Chapter IV., in constituting Protected Forests, attempts something of the same kind, but in a less complete manner; it demands an enquiry into rights and their record, but the statements in this record are only considered correct until the contrary is proved, and it does not provide for the proper regulation of the rights, whenever this should appear necessary for the purpose of maintaining the forest as such. Nor does it provide sufficient means for the protection of the area and of the forest growth on it. It follows that Chapter IV. attempts too much on the one hand and too little on the other, and consequently it is, in its present shape, an anomaly. Unfortunately it has occasionally been made use of in order to avoid the more minute procedure prescribed in Chapter II., and thus attempts have been made to create permanent forest estates under it without securing the necessary guarantees of lasting success.

11. When the time comes for a general revision of the Act, these shortcomings must be removed. In the meantime, Burma and Madras have taken advantage of the experience gained since 1878, and have substituted for Chapter IV. a set of simple provisions which do not attempt a half-hearted record of rights, but merely provide in a general way for the protection of the forest produce on all Government lands, until the demarcation and settlement of the permanent State Forests have been completed.

12. Another point on which the Burma and Madras Acts differ from the Indian Act is in the matter of "Private Forests." The latter Act provides that the Government may assign to any village community land which has been constituted a Reserved Forest; hence, in order to constitute a "Village or Communal Forest," it is necessary to first go through the procedure of making it a Reserved Forest. The Burma Act, on the other hand, provides that any land at the disposal of Government may be constituted a Village Forest for the benefit of any village community or group of such communities. This is a much more expeditious method of procedure, and in this respect also the Burma Act is superior to the Indian Act. The Madras Act contains no provision for the constitution of Village Forests in the above sense.

13. The Berar Forest Regulation, which is about to become law, is in many respects of a more simple description than any of the previous Acts, because in that province all Government lands were at settlement declared free of rights, and, in order to constitute a State Forest, only a notification to that effect in the Local Government Gazette is required. The Regulation recognises only one class of demarcated State Forests, for which it provides the proper means of protection, as well as for making the several areas as generally useful as is compatible with due regard to their maintenance as forests.

14. On the whole, it may be safely asserted that, although the Indian Forest Laws are not perfect, very considerable progress has of late years been made in improving them. Whether ultimately each province will have its separate Act, or whether the several Acts now existing will be summed up in one, it

is at present difficult to foresee; it would, however, appear to be the most natural and suitable arrangement that the efforts of the Administration should be directed towards the passing of one Act, embodying the leading general principles of forest legislation, which must be the same in all provinces, and giving powers to the several Local Governments to draw up, under the authority of the general law, regulations to suit the peculiar requirements of each province.

15. The present enactments provide for the promulgation of *local rules* under various sections of the Acts. In accordance with these provisions numerous sets of rules have been drawn up and passed, during the last five years, in Madras, Bombay, Bengal, North-Western Provinces and Oudh, Punjab, Burma, Assam, and Coorg.

Departmental Organization.

16. The Forest Staff is divided into—

(*a*) Controlling Staff,

(*b*) Executive Staff, and

(*c*) Protective Staff.

The Controlling Staff will now consist of all officers holding the rank of Assistant Conservator and upwards; it has been reorganized in all three presidencies during the last three years.

17. The creation of the Forest Department is of comparatively recent date, its first organization in the *Bengal* Presidency having been attempted as late as 1862. Since then the work has increased rapidly, and frequent changes have been necessary in the number and the grading of the staff to meet the growing requirements of the administration. The first graded list of Conservators, Deputy, and Assistant Conservators was published in 1869, when the staff consisted of 57 officers, costing on the average Rs. 577 each a month. Subsequently frequent additions were made, until in 1882 the staff consisted of 94 officers, costing on the average Rs. 558 each a month. More from necessity than design the rate of pay was thus reduced, while the number of officers was increased, so that the prospects of promotion for the junior officers were less favourable in 1882 than they were in 1869. In particular, the proportion of higher appointments was very small, the number of Conservators and Deputy Conservators being to Assistant Conservators in the proportion of 1 to 1. The result was that a junior Assistant Conservator had to serve from 12 to 15 years before he could hope to be promoted to the grade of Deputy Conservator on Rs. 500 per mensem; and from 18 to 20 years before he could reach the rank of Deputy Conservator on Rs. 700 a month. This was not so much felt while the Department was of recent creation and the majority of the officers were young, but for some time past a strong feeling of dissatisfaction and disappointment with their position and prospects had gathered amongst the staff, and in order to meet the just claims of a deserving body of servants of the State, a reorganization was decided on, which, having received the sanction of Her Majesty's Secretary of State, came into operation on the 3rd September 1882.

18. Under this reorganization the number of officers was raised to 100, while the average rate of pay was fixed at Rs. 642 a month per officer. In 1884 three officers were added to meet the increased requirements of Burma, and recently an officer has been sanctioned for Biluchistan, and 3 additional officers for Assam, so that at the present moment the staff in the Bengal Presidency stands as follows:—

Rates of pay.	No.
Conservators of Forests (Rs. 1,000, 1,250, and 1,500)	10
Deputy ditto („ 550, 650, 800, and 900)	55
Assistant Conservators of Forests (Rs. 250, 350, and 450) ...	38
Special appointments in connection with the Forest School, Forest Surveys and Working Plans (Rs. 600 to 900)	4
Total ...	107 officers,

with an average pay of Rs. 628 each per mensem.

19. Before the reorganization of September 1882 came into force, the Forest staff had, by a series of measures, been localised. Accordingly, the new staff (with the exception of the four special appointments) was arranged in five lists as follows :—

Provincial list.	Conservators.	Deputy Conservators.	Assistants Conservators.	Total.
1. Bengal-Assam	2	11	9	22
2. North-Western Provinces and Oudh (with Ajmere) ...	3	10	8	21
3. Punjab (with Biluchistan)	1	11	7	19
4. Central Provinces-Berar (with Coorg)	2	11	7	20
5. British Burma (with the Andamans)	2	12	7	21
Total ...	10	55	38	103

20. In the *Madras* Presidency the Controlling Staff had gradually grown, until it consisted, in December 1882, of 16 officers, with an average rate of pay of Rs. 455 each officer a month. Very considerable changes, which will be explained further on, were introduced in 1882, which rendered a reorganization absolutely necessary, and accordingly in February 1883 Her Majesty's Secretary of State sanctioned a staff of 24 officers. Subsequently two further officers were added, so that the staff stands now as follows :—

Conservators of Forests	2	
Deputy Conservators of Forests	14	
Assistant „ „	10	
Total ...	26	officers;

with an average pay of Rs. 628 a month per officer, the grading being the same as that on the list of the Bengal Presidency.

21. Similarly, the staff in the *Bombay* Presidency consisted in 1883 of 23 officers drawing pay at the rate of Rs. 551 a month each officer. A reorganization was sanctioned in November 1883, which provides the following staff :—

Conservators of Forests	3	
Deputy Conservators of Forests	14	
Assistant „ „	10	
Total ...	27	officers;

with an average rate of pay of Rs. 635 each a month. The Government of Bombay does not consider this staff sufficient, and it has pointed out that the number of officers must shortly be further increased, if the Department is to do justice to the work devolving upon it.

22. To sum up, the Controlling Staff in the 3 presidencies, stands as follows :—

	Rates of Pay	No.	
Inspector General of Forests to the Government of India	Rs. 1,700 to 2,000	... 1	
Conservators of Forests	„ 1,000 to 1,500	... 15	
Deputy Conservators of Forests ...	„ 550 to 900	... 83	
Assistant „ „ ...	„ 250 to 450	... 58	
Special appointments	„ 600 to 900	... 4	
Total		... 161	officers.

It may be assumed that the total staff will, during the next few years, rise to about 170 officers in all. Efforts should be made to prevent any further growth for a series of years to come, by developing the executive staff, and thus creating a cheaper agency for the subordinate duties.

23. While the duties of the Controlling Staff consist chiefly in initiating all important measures and in exercising a proper supervision over the operations of the Department, those of the rest of the Staff comprise the executive and protective work. The creation of an efficient and trustworthy Local Staff is specially difficult in a country like India, for reasons which need not be detailed here. Suffice it to say that special efforts have been made during the last five years to attain the desired end, by a more careful selection of the men to be employed, by educating them for their profession, and by holding out reasonable prospects of advancement. It would lead too far to detail all the various steps taken in this respect; the final result as now arrived at is as follows:—

The Executive Forest Staff comprises—

	Monthly pay.
(*a*) Sub-Assistant Conservators	... Rs. 150 and upwards.*
(*b*) Forest Rangers	... „ 50 to 120.

The Protective Forest Staff comprises all members of the forest establishment below the rank of Forest Ranger, such as Foresters, Forest Guards, &c.

System of Administration.

24. The Conservator of Forests has the general control of forest matters in a province or in part of a province. His charge is sub-divided into the following charges:—

I.—Divisions or controlling charges, held by Deputy Conservators, Assistant Conservators, 1st grade, and officers of a lower grade who have qualified for the charge of a Division.

II.—Ranges or executive charges, held by Assistant Conservators of the 2nd and 3rd grades, Sub-Assistant Conservators and Forest Rangers.

III.—Beats, or protective charges, held by Foresters and Forest Guards.

25. When the Forest Department was first started, the officers were generally placed under the direct orders of the Conservator of Forests, who in his turn was responsible to the Local Government. Soon, however, it was felt that the officers were in a somewhat isolated position, and that often friction took place between them and the ordinary Civil and Revenue authorities of the country. Hence the desire sprung up to connect the two services more closely, and systematic proposals for giving effect to this were put forward by Mr. Brandis, late Inspector General of Forests to the Government of India, when submitting a scheme for a reorganization of the Bombay Forest Staff in 1870. The plan then adopted consists of the appointment of a "District Forest Officer" to each district or collectorate, who is in charge of all forest matters in the district, and entirely subordinate to the Collector, through whom he corresponds with the Conservator. The next step in this direction was taken by the Chief Commissioner of the Central Provinces, who introduced in 1877 a modified system, according to which the Conservator and his Assistants remain in independent charge of all Reserved Forests, while the District Forest Officers are subordinate to the Deputy Commissioners regarding all Unreserved Forests. A further modification was introduced by the Government of the North-Western Provinces and Oudh in 1880, by which the District Forest Officer is made subordinate to the Collector, his correspondence being arranged in two classes; that referring to accounts, establishments, and a few other subjects is sent direct to the Conservator of Forests, while that on all other subjects is submitted by the District Forest Officer to the Collector, who forwards it to the Conservator. The same system was introduced into Assam on the 1st January 1882, and a similar arrangement has been in force in Burma since 1880. In Bengal the subject has been under consideration for a number of years, and arrangements have now been made to establish the connection between the Civil and Forest administration in most districts. The system has, however, been modified in

* Note.—The upper limit of salaries for Sub-Assistant Conservators will have to be considered at some future time. At present, the most highly paid Sub-Assistant Conservators draw Rs. 250 per mensem.

some parts of the country by placing a senior Deputy Conservator of Forests under the orders of the Commissioner of the Division instead of under those of the District Officer. In the Hazara and Rawalpindi Districts of the Punjab the Forest Officers have for many years past been nominally subordinate to the Deputy Commissioners. In 1881 proposals were submitted to make the system general in the province, and this is now being done. In Madras a system similar to that adopted in Bombay has been in force for some time, but the arrangements were improved in 1882. At the suggestion of Dr. Schlich, Inspector General of Forests, a similar system has just been introduced into Berar.

26. Generally speaking, it may be said that during the last five years the principle has been accepted and carried into effect in all provinces where this had not been done previously. These measures are calculated to be of considerable importance for the purposes of forest conservancy in India. The Forest Department having thus become an integral part of the general administration, all jealousy and friction about lands and revenue disappear; and the Collector or Deputy Commissioner being directly interested in the administration of the forest lands, a thorough safeguard has been established that the forest law is applied in a judicious manner, and that the requirements of the people of the district are duly considered. On the other hand, the just demands and requirements of forest conservancy will be attended to under the full authority of the head of the district, while full control over the departmental finance, the organization, and the technical part of the work has been reserved to the Conservator of Forests—an arrangement which will ensure a proper continuity of the work of the Department.

Training of Forest Officers in Europe.

27. As far back as 1867 arrangements were made, partly in France and partly in Germany, for the professional education of the members of the Controlling Staff. Under these arrangements 87 trained officers have, up to date, joined the Department in India. Of late years, however, a desire has made itself felt of providing the means of education in England, so as to make the Department independent of foreign countries. The subject has been discussed in detail for several years past, and it has now been decided to organize a Forest class at Cooper's Hill. During the discussion of this subject the Government of India, while admitting the desirability of having a National Forest School in England, has repeatedly expressed doubts whether the time for the contemplated change had arrived, and it has more particularly been pointed out that England does not at the present moment possess any forests fit for training grounds in all the branches of Forest science and practice required by an Indian Forest Officer, and it was suggested that the arrangements hitherto obtaining might remain in force until such training grounds had been established in England. However, it has now been decided to start operations at Cooper's Hill in September 1885, and if the various authorities work harmoniously together, there is perhaps no reason why the new institution should not, in course of time, become a success. The most essential point is that the management of some of the English Crown Forests should be so altered as to afford the necessary means for the practical instruction of the students.

The Forest School at Dehra Dun.

28. The most important educational measure has been the establishment of the Dehra Dun Forest School. As early as 1869 special attention was drawn to the necessity of training natives of India for forest work. Various experiments were made, until the Dehra Dun Forest School was established in 1878. As a matter of fact, however, little training, and that only practical, was done until 1881. In that year, for the first time, the work was started in a systematic manner, and the first course of theoretical instruction commenced on the 1st July 1881. Since then the arrangements have been considerably improved until, by a Resolution dated the 3rd June 1884, the School was placed on a new basis. Up to that time it had been a provincial institution, though students from all provinces were admitted. By the above-mentioned Resolution the School was converted into an Imperial establishment and placed under the orders of the

Inspector General of Forests, who arranges for the instruction and management in consultation with the Government of the North-Western Provinces and Oudh. The Director of the Forest School continues to be Conservator of the School Forests, and thus maintains a direct connection with forests suitable for teaching. The Director is assisted, in the first place, by two officers, the Deputy Director and the Instructor, who are both officers holding the rank of Deputy Conservator. One of these two officers devotes the whole of his time to instruction in Forestry, while the other holds charge of the Dehra Dun Forest Division, in the middle of which the School is situated., and also assists in the instruction in auxiliary sciences. The remaining branches are taught by several other Forest and Survey Officers, who have their headquarters at Dehra Dun during summer.

29. The School was originally established for the training of Foresters and Forest Rangers, and this principle has been maintained; but arrangements have also been made for the occasional instruction of members of the Controlling Staff who have been appointed to the Department in India. Apart from the last-mentioned branch, there are two classes, one in English and one in Hindustani, the former being called the *Rangers'* class and the latter the *Foresters'* class. The students of the English class are required to produce a certificate of having passed the Entrance Examination of an Indian University on the English side, and they are, if successful, granted, on leaving the School, certificates of qualification as *Rangers*. The students of the Vernacular class are required to prove that they have passed the Middle Class Examination in the North-Western Provinces and Oudh, or some corresponding standard in another province, and that they possess a competent knowledge of Urdu or Hindi. The course of instruction followed in this class is, for the present, of a much more elementary nature than in the case of the Rangers' class, and the students receive, if successful, on leaving the School, certificates as *Foresters*, which may also be given to students of the English class who have failed to qualify as Rangers.

30. The men who leave the School with the Rangers' certificate will ordinarily be appointed as Rangers on return to their province, and they become eligible for promotion to the rank of Sub-Assistant Conservator of Forests, after five years' satisfactory service as Rangers. The men who only obtain the Foresters' certificate will be employed as Foresters, but they can qualify for promotion to the class of Rangers by rendering satisfactory service as Foresters for not less than two years after their return from the School; they are ordinarily not eligible for promotion to the class of Sub-Assistant Conservator of Forests. Thus men of superior education will enjoy considerable advantages, while at the same time an opening is left for the advancement of Natives who do not know English.

31. The instruction comprises at present the following branches:—

(1) Mathematics.
(2) Elements of Physics and Chemistry.
(3) Elements of Mineralogy and Geology.
(4) Surveying, theoretical and practical.
(5) Elements of vegetable Physiology, and Systematic Forest Botany.
(6) Forestry, especially Sylviculture, Working-Plans, Forest Utilisation and Forest Protection, both theoretical and practical.
(7) Forest Law.
(8) Road-making and building.

The importance of a proper development of the Dehra Dun Forest School cannot be over-rated, and it is hoped that nothing will occur to prevent its further improvement. The results so far obtained are so satisfactory, that a proposal is now under the consideration of the Government of India to provide for the teaching of Agricultural science in connection with the Forest School.

Indian Forest Literature.

32. The principal works on Forestry and cognate subjects brought out under Government patronage during the last five years are:—

(1) Gamble's "Manual of Indian Timbers," 1881.
(2) Baden-Powell's "Manual of the Land Revenue Systems and Land Tenures of British India," 1882.
(3) Baden-Powell's "Manual of Jurisprudence for Forest Officers," 1882.
(4) The Indian Forest Code, 2nd Edition, published in 1881: a 3rd edition is now in the Press, and will shortly be issued.

In addition to the above, a Manual of Indian Sylviculture is under preparation.

33. Gamble's "Manual of Indian Timbers" contains descriptions of the wood of 906 species, belonging to 432 genera, the information for each species extending to the scientific name, vernacular names, description of the wood geographical distribution of the tree, rate of growth, weight and strength and uses. The book is a very store-house of information regarding all the more important timbers growing in India.

34. Baden-Powell's two excellent Manuals are of the very greatest use to the Department as well as to Revenue Officers, and they have been prescribed as text books for the examination of Forest Officers in Revenue and Forest Law. The Revenue Manual opens with an attempt, of a somewhat novel character, to give a comparative account of the Land Tenures of India generally, followed by a similar comparative account of the different Land Revenue Systems, *viz.*, the permanent settlement, the malguzari settlement of the Central Provinces, the village or mouzawar settlement of Northern India, and the ryotwari settlement of Madras and Bombay. The remaining or special portions of the book are devoted to a more detailed description of the system of each province, concluding with a chapter comprising the systems of the outlying provinces, such as Burma and Assam, in which none of the well-known great revenue systems prevail, but in which special revenue arrangements, probably of a tentative character, have been adopted.

35. The Manual of Jurisprudence for Forest Officers is the first of its kind which has been published in English, and is the outcome of extended study on the part of the author. The subject of Forest Law in India is of too recent growth to make the Indian Forest Acts a complete representation of Forest Law. The author has therefore given a more complete view of the general principles underlying Forest Jurisprudence, and, for the purpose of comparison, the principles of forest law derived from the leading text books of English, French, German, and Italian Law. His remarks are followed by practical illustrations drawn from the Indian and Burma Forest Acts. Then follow chapters on Criminal Law, dealing with the protection of the forests and the punishment of offences both against the forests and their produce in transit, together with the principles of Criminal Procedure. The next chapter deals with the legal organization of the Forest Service, and the duties and liabilities of Forest Officers. The last chapter treats briefly of portions of the Law of Contract, the outlines of Civil Procedure, and of the Stamp and Registration Laws, as far as Forest Officers need be acquainted with them.

Surveys and Working Plans.

36. The necessity of procuring suitable maps of the forests and the surrounding country, and of managing the forest estates according to well considered plans, was recognised at an early stage of Indian Forest management. Accordingly, in 1872, a scheme was started of providing a special Survey and Working-Plans Branch of the Department. Only the Survey, however, was actually started, while the Working-Plans Branch remained in abeyance for many years afterwards. The Forest Survey, which is suitably connected with the Imperial Survey of India, has done good work ever since 1872. During the last five years it has chiefly surveyed and mapped forests in the North-Western Provinces and in Berar. Apart from the special Survey,

a considerable area of forests has, during the last few years, been surveyed by the regular Survey Department in Burma and in Bombay.

The Working-Plans Branch has actually been brought into existence only during the last five years, first by starting the preparation of working-plans in a more regular manner in the North-Western Provinces, Burma, the Punjab, and other provinces, and quite lately by introducing a regular system of preparation and a control by a central office under the authority of the Inspector General of Forests. This last measure must be considered as of the first importance; it was mentioned in the Review for 1882-83, but it may be useful to indicate here its leading principles and motives.

37. A working-plan will henceforth be prepared for every reserved forest or a collection of reserved forests, as well as for all important protected or other forests under the management of the Forest Department. It will be based upon the present condition of the forests, and it will deal with all points connected with their management and improvement, amongst which the following are the most prominent:—

(i) Calculation of the growing stock:

(ii) Calculation of the annual increase:

(iii) Calculation of the quantity of material to be removed, annually or periodically, with due consideration of the production of the forest and of the demand;

(iv) Arrangements for the re-stocking of all cleared areas (natural reproduction, sowing and planting, protection against fire, grazing, &c.).

The minuteness of each working-plan will depend on the demands which are made on the forests, the nature and value of the produce removed from them, and the other purposes which they are to fulfil. The preparation of the working-plans is carried out by selected members of the staff allotted to the several provinces, who work under the orders of the Conservators of Forests. The general supervision of the Branch has been entrusted to the Inspector General of Forests, who will cause to issue, in the form of circulars or otherwise, directions regarding the technical part of the preparation of working-plans. Should he disapprove of the proceedings of any local authorities in this respect, he will suggest to the Local Government concerned the issue of such orders on the subject as may appear to him advisable. Any difference of opinion between the Inspector General and the Local Government will be referred for the orders of the Government of India. The Inspector General of Forests, or the Assistant Inspector General, will also visit the several provinces and advise the local officers on the spot.

Working-plans, when drawn up, will be sent by local Conservators, for scrutiny of their technical points, to the Inspector General of Forests, who will send them, with his opinion and remarks, to the Local Government for the issue of the necessary orders. In due course the working-plans will be submitted to the Government of India, either for record or for orders, in the same way as land revenue settlements or similar works. No deviation from an approved working-plan will be permitted without the previous orders of the Local Government, who will, whenever necessary, consult the Inspector General of Forests before passing such orders. A record of all working-plans and their provisions will be kept in the Inspector General's Office, where the execution of the sanctioned plans will be watched. At the close of each year, Conservators will submit returns to the Inspector General of Forests, showing the work done during the year under the provisions of the working-plan. If any deviation is noticed, the Inspector General of Forests will either draw the attention of the Local Government to it, or submit the case to the Government of India for the necessary orders.

38. The localisation of the forest business, which has been effected of late years, has left the Government of India without any real safeguard that the valuable Government forests are being managed in the right way. The systematic preparation of working-plans and their control gives to the Government of India the means of following the working of the forests, without unduly interfering with the necessary freedom of action of the Local Governments.

Madras.

39. The Government of India has of late years taken an exceptionally large share in advancing forest conservancy in Madras. That Presidency was among the first of the Indian provinces in which forest conservancy received attention; indeed, the well-known Nilambur Teak plantations were commenced as early as 1844, though a regularly constituted Forest Department was apparently not organized until 1856. The development of the Department was peculiar, and towards the year 1875 it had become apparent that its principal efforts were directed towards the establishment of plantations and groves scattered over the country, while the natural forests of the Presidency were not under sufficient control. Then came the Famine Commission in 1877, who pointed out the necessity for more vigorous action in the protection and re-stocking of the natural forests, more especially those situated within the catchment areas of the principal rivers used or diverted for the irrigation of the low-lying country.

40. The more immediate cause for direct interference arose out of the introduction of the Indian Forest Act of 1878. When that Act was under consideration, the Madras Government declared it unsuitable for extension to Madras, because it was held by that Government that the rights of villages over the waste lands and jungles were of such a nature as to make it impossible to constitute forest estates under the provisions of the Indian Forest Act; and after some discussion it was decided to pass a special Act for the Southern Presidency. The first draft of a Madras Forest Bill, which was submitted to the Government of India, was found to be defective as regards both substance and form, and was therefore not approved. After further correspondence a new Act was submitted for the assent of His Excellency the Governor General in Council, but it was found that both from a forest and a legal point of view the Act was unsuitable. Accordingly His Excellency the Governor General in Council vetoed the Act in September 1881, and deputed Mr. Brandis, late Inspector General of Forests to the Government of India, to visit Madras, with the view of his conferring with the Madras Government on the whole subject of forest conservancy in that Presidency. Mr. Brandis left for Madras in October 1881, and remained there until January 1883. During that time he visited nearly all the important forest districts, and submitted proposals to the Government of Madras, which now form the basis of active forest conservancy in the Presidency.

41. The first step of importance was the amalgamation of the Jungle Conservancy Fund with the Provincial Forest Department, and, in connection therewith, the localisation of the Receipts and Charges of the Department. Next the Collector was appointed chief of the Forest Department in each district with a District Forest Officer as Assistant; while the districts were arranged in two Circles, the Northern and Southern, each presided over by a Conservator of Forests, who is the Consulting and Inspecting Officer, with authority in matters of finance and establishments. In order to provide the necessary staff, a comprehensive reorganization of the superior and subordinate establishments was worked out, and received the sanction of the Government of India and of Her Majesty's Secretary of State for India. Three experienced officers belonging to the staff under the Government of India were, at the request of the Madras Government, transferred to the Southern Presidency. The long pending question of a Forest Law for the Madras Presidency was brought to a satisfactory conclusion by the passing, with effect from the 1st January 1883, of the Madras Forest Act, No. V. of 1882.

42. Having thus been provided with the necessary and appropriate means of action, the Department may be said to have started forest work on new lines towards the close of the year 1882. The subject which claims foremost attention is the demarcation and settlement of permanent forest estates, constituted under Chapter II of the Act. The areas which have hitherto been considered as under the more special management of the Department amount to 824 square miles in the Northern Circle, and to 2,046 square miles in the Southern Circle, or a total of 2,870 square miles. These areas have been, or will be,

declared reserves under the Forest Act, together with other forest lands of considerable extent, and in the meantime they will be protected by rules passed under Section 26 of the Act. These operations will tax the energies of the Department for a series of years, and, until considerable progress has been made in this respect, the more professional work of the forester can only be attempted on a moderate scale. A fair commencement has, however, already been made by protecting from fire 865 square miles of the more important forests. Planting operations, which had on the 1st April 1884, extended over 40,850 acres, are being pushed on, while the financial results of the Department are fairly satisfactory. On the whole, it may be said that forest conservancy in Madras has, in the short space of the last three years, been entirely remodelled and put on a satisfactory footing.

Bombay

43. Forest conservancy has received special attention in Bombay for many years past; and immediately after the passing of the Indian Forest Act, an area of about 15,000 square miles was declared partly reserved and partly protected forests. Although a very considerable area was thus brought under the operation of the Forest Act, this had been done without the necessary enquiries into the rights and requirements of the people living in the vicinity of the forests. Accordingly, such an enquiry, in accordance with the provisions of the Act, was set on foot, and it has, during the last five years, occupied a considerable portion of the time of the Forest staff. In addition, as many as six and seven Civil Officers have been employed on this at one time, besides a number of Civil Officers who attended to it in addition to their ordinary duties. The work is of a very laborious nature, but good progress has been made in it. On the 1st April 1884, the enquiry into and settlement of an area of 6,985 square miles had been finally disposed of, while considerable progress had been made in a large portion of the remaining areas. It is expected that the work will be completed in about three years.

44. The subjects of ráb cutting (*i.e.*, the collection of leaves and shoots for manuring purposes), kumri cultivation, and grazing have specially occupied the attention of the Bombay Government and its officers. Arrangements have been made for a proper ráb supply, without paralyzing forest conservancy, a sufficient area having everywhere been set aside for this purpose. Kumri cultivation is being restricted within reasonable limits, and moreover a fairly successful attempt has been made to combine this method of cultivation with the rearing of useful timber trees. Instead of leasing the grazing in the various forest tracts to speculators, on whom the ryots depended for the grazing, it has been arranged to manage the areas under Government control by levying a fixed grazing fee per head of cattle. This change is described as being a great boon to the people, apart from the fact that it has considerably increased the Government revenue, instead of diverting the money into the pockets of speculators. In order to assist natural reproduction, enormous quantities of seed of useful timber trees have of late years been sown in the Bombay forests; but it has not been possible so far to ascertain the exact results, though they are reported to be favourable.

45. The forest revenue has enormously increased of late years, partly owing to increased requirements of fuel for the Indus Valley Railway, but chiefly in consequence of generally increased demands on the Government forests, brought about by the reduction of private jungles. For years past private owners have cut down their forests and carried them to the nearest large town and other centres of consumption. In the same degree as these sources begin to fail, the demands on the Government forests must increase.

Bengal.

46. Forest conservancy in Bengal was first commenced in a systematic manner towards the end of 1872. Since then it has made rapid progress, and the management is now at least on a par with that in provinces where operations

were begun much earlier. As regards the formation of reserved forests, the following figures will illustrate the progress:—

	Area of reserved forests in square miles.
On the 1st April 1873	108
„ 1st „ 1880	2,945
„ 1st „ 1884	4,635

47. Since the beginning of 1880, forest conservancy has been extended to the Orissa Division and to the southern part of the Chota Nagpore Division. In the former the Khoordah Forests have been brought under departmental management, and the Angul Forests are now being taken up. There are also excellent sal forests in the Khondmals of Bod, which should be brought under control at an early date. In Chota Nagpore the extensive and valuable sal forests in Singhbhoom have been demarcated and settled. The proposed railway direct from Bengal to Bombay *vid* the Central Provinces passes through these reserves, and the measures taken for their reservation will be highly beneficial. Detailed enquiries have also been made regarding the practicability of bringing the extensive private forests in Chota Nagpore under better management than they have hitherto enjoyed. This question is, however, as yet pending.

48. Mr. Brandis, when Inspector General of Forests, visited the forests in the Darjeeling and Jalpaiguri Districts in 1879, and submitted a Report on them in November 1880, in which he made suggestions regarding their future management. Some difficulties having arisen regarding the management of the forests in the immediate vicinity of Darjeeling, Dr. Schlich, the present Inspector General, enquired into the matter on the spot, and submitted a working-plan for them in April 1882, which has been accepted as the basis for their management. The Inspector General of Forests has lately been on a tour of inspection in the forests of Chota Nagpore which, it is expected, will result in a definite plan for their management being drawn up.

49. The area protected against fire was 661 square miles in 1879-80, and 768 square miles in 1883-84. The area of plantations has increased from 911 to 2,568 acres during the last five years.

The financial results were as follow:—

	Receipts. Rs.	Surplus. Rs.
In 1879-80	4,49,524	1,73,776
„ 1883-84	6,94,334	3,06,321

North-Western Provinces and Oudh.

50. In the North-Western Provinces and Oudh forest conservancy was commenced at a comparatively recent date; hence the progress during the last five years is perhaps not so marked as in some of the other provinces, where operations were commenced at an earlier date. Steady progress has however been made. One of the most important measures carried out during the last five years is the acquisition and consolidation of 85 square miles of forest lands in the Banda District, while an additional area of 35 square miles has been taken under management, the private co-sharers receiving a proportion of the net income. These are steps in the right direction, as forest lands in Bundelkund are on the decrease. The operations in connection with the Dehra Dun Forest School have already been mentioned. Special care and attention has, during the last five years, been bestowed upon the improvement of the management of the School forests. In one part of a forester's work the North-Western Provinces and Oudh are much ahead of any other province, namely, in the construction of roads, of which a considerable number of miles are constructed annually. The preparation of working-plans has also received special attention of late years.

51. The late Inspector General of Forests visited most of the forests during the early months of 1881, and submitted an exhaustive report on them in November of the same year; the suggestions contained in it have since been

guided the local authorities in the management of these forests. The present Inspector General visited the Central Circle in 1884, and discussed and submitted a scheme for the reorganization of the Subordinate Staff, which has been accepted by Government. The main principle of the new organization is, that all the forests shall be grouped in Ranges of suitable size, the work in each Range, or executive charge, being entrusted to a qualified Ranger.

52. The area of reserved forests has, during the last five years, been increased from 3,279 to 3,331 square miles, that of areas protected from fire, from 661 to 871 square miles, and plantations from 2,262 to 3,717 acres.

The financial results were as follow :—

	Receipts.	Surplus.
	Rs.	Rs.
In 1879-80	10,39,966	3,23,372
„ 1883-84	16,11,383	5,69,498

The revenue realized in 1883-84 is exceptionally high, owing to special sleeper operations. Many of the forests in the North-Western Provinces and Oudh were considerably overworked in former years, owing to their position on the edge of an enormous and almost forestless plain. These forest estates are, however, very valuable, and their financial importance will steadily increase.

Punjab.

53. The formation of permanent forest estates was, some five years ago, in a backward state. Efforts have been made of late years to push on this work, but the difficulties in the way were very great. However, some progress has been made, as will be seen from the following data :—

	Area of reserved forests	Area of protected forests.
	Square miles.	Square miles.
On the 1st April 1879	795	...
„ 1st „ 1884	1,022	311

Much remains to be done in this respect.

The forests in the Native States of Chamba and Bashahr were leased by the British Government 20 years ago. Efforts have been made during the last few years to secure the forests in several of the small Hill States near Simla, but with very limited success.

54. The question of the treatment of the Hoshiarpur chôs or erosion has received much attention. The hills from which the chôs descend have, owing to cutting and excessive grazing, been almost completely denuded of all growth, and as they consist of exceedingly friable material, large masses of debris are annually carried into the plains at their foot, there forming regular sand torrents, which have not only ruined extensive tracts of cultivated land, but have even carried away several villages and a portion of the town of Hoshiarpur. The evil has been permitted to attain very considerable dimensions, the loss of land revenue alone amounting already to about a lakh of rupees annually. However, the matter is now under serious consideration, and it is expected that effective steps will shortly be taken to counteract the further desolation of cultivated lands. Probably the best plan would be to buy out the few inhabitants and graziers who live in those hills, and to bring the land under forest. Such a measure, apart from the fact that it is necessary on general grounds, is even likely to be financially successful, as the hills overhang a large extent of country bare of forest.

55. The late Inspector General of Forests drew up a Report on the Bashahr forests in 1881, this being the third Report on these forests prepared by Mr. Brandis. These important Deodar forests have now been worked on the lines of his proposals for 20 years, with the most beneficial results.

56. Dr. Schlich, Inspector General of Forests, was deputed to Kulu in 1882, in connection with the question of the treatment of the Deodar and other forests in that District. He submitted a Report, in which he proposed that about 80

square miles of deodar localities should be set aside as reserves, while the remaining forests, about 320 square miles, should be preserved with the assistance of the village head-men, but under the control of the Forest Department, for the benefit of the inhabitants. His proposals were only partially accepted by the Local Government, who have substituted a system under which the forests are to be arranged in four different classes, with different rules for each. Such a complicated system is not likely to work in practice, and it will no doubt, after a fair trial, be considerably modified.

57. The area of plantations has, during the last five years, been increased from 17,870 to 18,561 acres. Vigorous efforts are now being made to increase the future supply of deodar by planting it extensively in the most suitable localities.

The progress in the financial results is as follows:—

	Receipts. Rs.	Surplus. Rs.
In 1879-80	6,40,819	1,69,143
„ 1883-84	9,10,177	2,57,031

The Punjab has, more than any other province, profited by the education offered to Forest Officers at Dehra Dun, and the wisdom of this move is already becoming apparent in the improvement of the Executive Staff.

Central Provinces.

58. All waste lands at the disposal of Government in the Central Provinces were declared reserved forests under the Indian Forest Act in 1879. The area amounted in that year to 19,383 square miles, and since then the changes have been insignificant. Of this area, 2,501 square miles were classed as first class reserves, that is to say areas under strict conservancy; while the rest, or 16,882 square miles, were called second class reserves, or areas in which a certain amount of cultivation was permitted, and in which a more lenient conservancy generally is practised. The first class reserves are fairly well demarcated, but the boundaries of the second class reserves are in an unsatisfactory condition. Accordingly much time and labour has of late years been bestowed upon the more complete demarcation of the latter, with the view of transferring all important parts to the first class reserves, and of giving up certain parts permanently for cultivation. Some progress has now been made in this matter and the transfers have commenced, but it will take some years yet to complete the business. It has been recognised that this is the most urgent part of the Department's work.

59. The Central Provinces were repeatedly visited by the late Inspector General of Forests, who drew up a detailed Report on the management of some of the more important areas in 1876, and left copious notes regarding others. Dr. Schlich visited the Central Provinces in the winter of 1882-83, and drew up a Report on the management of the forests, which is dated the 1st June 1883. After giving a general sketch of the forests, it deals with the Areas and Boundaries of the reserves, the Organization and Protection of the Forests, Cultural Operations, the working of the Forests, and the Financial Results. As regards areas, &c., it gives the following data:—

	Square miles.
Assessed cultivated area	22,095
„ grazing lands	2,937
Area of private forests	34,937
„ of Government forests	19,719
Other areas	4,757
Total area	84,445

The area of the Government forests represents 23 per cent. of the total area, while the private forests contain 16,482 square miles of unculturable

waste, representing 20 per cent. of the total area. The population amounted to very nearly 10 millions, and it had, according to the last Census, increased at the rate of 25 per cent. in nine years, so that its doubling during the next 40 or 50 years is by no means impossible. The private forests, which now comprise 34,937 square miles, are rapidly disappearing under the axe and the plough, and considering that, even now, the demands on the Government forests are already great, it follows that they will be enormously increased as the population increases and cultivation is extended. Hence it is essential that the area of Government forests should not be much reduced and that they should all be managed as first class reserves, if it is desired to provide the necessary forest produce for these inland provinces.

60. The Chief Commissioner has lately taken up the question of the Zemindari forests, and, in a Memorandum of the 21st September 1883, has drawn attention to their rapid destruction chiefly in consequence of Railway extension. He has called for information on a variety of points, with the view of considering what steps shall or can be taken in order to arrest the further destruction of the forests. These measures may help to retard the evil, but the only satisfactory remedy will be found in the systematic conservancy of the Government forests.

61. Fire protection has made more progress in the Central Provinces than in any other province; the area under protection amounts now to 1,366 square miles, against 1,118 square miles in 1879-80.

The financial results compared with those of five years ago are as follow:—

	Receipts. Rs.	Surplus. Rs.
In 1879-80	10,06,724	4,84,150
„ 1883-84	9,94,769	5,55,711

British Burma.

62. It has already been stated that the Burma Forest Act was passed in 1881, and that Rules were promulgated under several of its sections.

The late Inspector General of Forests made an extended tour in Burma in the beginning of 1880, and submitted a detailed Report on Forest Administration in that province in January 1881.

63. Burma is the principal source of *teak* timber, which may justly be called the prince of woods. It combines in a remarkable manner many useful qualities; hence its employment for a variety of purposes in Europe, India, and other countries is steadily extending. Teak has held its own against all wood exported from North and South America, and against those which have been discovered in Australia and South Africa. Although the export of teak from Bangkok has considerably increased of late years, sufficient is known of the sources of the teak supply to make it clear that Burma must remain the principal source of export of this timber. To give an idea of the importance of this trade it may be mentioned that in 1883-84 no less than 158,408 tons were exported, which represented a value of Rs. 1,58,96,271. This timber, together with that used in the province, comes partly from forests situated in British Burma, but chiefly from forests situated beyond the frontier. The proportion may roughly be taken at present as 1 to 4; in other words only about one-fifth of the teak comes at present from British forests. Considering that the forests beyond the frontier are not subject to conservancy measures, their resources must be exhausted in course of time. The great importance of the British forests becomes, therefore, at once apparent; hereafter they will have to supply as much timber as is now derived from all sources, or else the supply of this important commodity must fall off. This fact does not seem to have been fully admitted until comparatively lately, and, in consequence, all attempts at forest conservancy in British Burma had to face a most determined resistance on the part of the timber dealers. Although, therefore, conservancy was started comparatively early, it is only of late years that the proper demarcation and settlement of reserves, or permanent forest estates, have made good

progress. In 1879-80 the area amounted to 1,612 square miles, while it had risen to 3,759 square miles on the 1st April 1884. Further additions are contemplated.

64. Another point of difficulty in this respect consists in the fact that most of the valuable teak localities are inhabited by Karens, a wandering tribe, who cut down a fresh piece of jungle every year, burn it and cultivate the site, and then abandon it. This difficulty has of late years been overcome by assigning to each village, or a number of villages, a certain defined area within which the inhabitants may cut their taungyas, or hill gardens. These blocks are in many instances situated within the boundaries of the reserves. Upwards of 400 square miles have up-to date been assigned in this manner.

65. The area of plantations has, during the last five years, risen from 5,904 to 13,415 acres, a satisfactory progress which is mainly due to the enlistment of the services of the Karens, who are permitted to cut taungyas in certain localities, subject to the condition that they plant teak with their crops. In this manner natural reproduction is assisted at a reasonable outlay, and it is hoped in this way to increase the production of teak, so as to keep pace with the rising demand on the forests.

Less progress has been made in fire protection, the protected area having risen during the last five years from 151 to 261 square miles. As soon as the demarcation and settlement of reserves has been completed, fire protection will receive more extended attention.

66. The Receipts and Surplus derived from the British Burma forests show excellent progress, as will be seen from the following data :—

	Receipts.	Surplus.
	Rs.	Rs.
In 1879-80	11,80,190	4,96,700
„ 1883-84	25,09,275	12,91,451

Until the 1st January 1882 a duty of 7 per cent. *ad valorem* was levied on all timber imported into British Burma by the Salween River. From the above-mentioned date it was reduced to 1 per cent., and subsequently to ½ per cent., an amount sufficient to cover the expenses of controlling the timber operations on the Salween. But for this reduction the Receipts and Surplus would have been 2½ lakhs of rupees more than they were in 1883-84.

Generally speaking, the Burma forests are the most valuable in India, and they must be most carefully looked after, not only for the sake of the considerable revenue which they yield to the State, but also in order to perpetuate a sufficient supply of teak timber to India and the world generally.

67. After a lengthy discussion, a liberal concession was given to a Mr. Routledge in England, in 1882, for the conversion of bamboos into paper pulp, but up to-date nothing has come of it. It seems, however, likely that bamboos, of which Burma possesses an immense wealth, may some day become of special importance in this respect.

Assam.

68. Owing to the climate of Assam being specially adapted for the cultivation of tea, forest conservancy is of greater importance in this province than would otherwise be the case. As yet Assam has a large area of forests, but in the more accessible districts it has already been sadly reduced. Hence the demarcation of reserves has been pushed on of late years. The area stood at 2,015 square miles in 1879-80, and it is now 2,314 square miles.

Fire protection has made some progress, the protected area having risen from 144 to 148 square miles during the last five years.

69. The area of plantations has during the same period risen from 1,088 to 1,296 acres. Of the latter area, 1,023 acres are stocked with *Ficus elastica*, the Assam India-rubber tree. Assam and the surrounding districts are the home of this tree, which is the source of a considerable export, amounting to some 600 tons per annum, valued at 12 to 13 lakhs of rupees. The mode of

tapping the rubber trees is generally most wasteful, and as they are scattered over a very wide extent of country, it has been found impossible to protect them. All that can be done is to derive a revenue from existing sources, and to establish, with the proceeds, compact plantations in the most favourable localities. This policy has lately been urged upon the Chief Commissioner of Assam by the Government of India.

70. The Receipts and Surplus of the Assam Forest Department in 1879-80 compare thus with those of 1883-84:—

	Receipts.	Surplus.
	Rs.	Rs.
In 1879-80	1,64,335	31,506
„ 1883-84	2,11,445	11,883

Railways are now beginning to make their way into Assam, and with their progress the returns from the forests are likely to increase considerably. In the case of the Makum line a so-called timber concession has been given, by which the Railway has received, in one year, wood valued at Rs. 83,538. It is undesirable to grant such undefined concessions in future.

Coorg.

71. Forest conservancy in Coorg has made steady progress during the last five years, but no stirring events have occurred. Demarcation has been proceeded with; measures have been taken for the preservation of the Devara Kadus or "sacred groves;" sandalwood is being steadily planted; the construction of a tramway from the Nalkeri Forest to Hunsur (in Mysore) has been considered, and a part of the line has been sanctioned.

Ajmere.

72. The waste lands and hills in the Government villages of Ajmere and Merwara were originally the absolute property of the State, but at the settlement of 1850 they were included in the Shamilat or common land of the villages, under the condition that the villagers themselves would plant trees and preserve the jungle to a reasonable extent. This engagement they never attempted to keep, and, as the lands became gradually denuded, pasture failed, wood became scarce, the water-supply in wells and streams became uncertain, and the smaller tanks were silting up at an alarming rate. It was decided in 1871, in consequence of proposals made by the Inspector General of Forests, on the occasion of a new settlement, to acquire for forest purposes certain areas on the hills of these districts. For this end the Ajmere Forest Regulation of 1874 was passed, under which lands can be taken up, certain rights being secured to the villages. In this way 101 square miles had been taken up in 1879-80, and placed under systematic management and protection.

73. In December 1878 the Inspector General visited Ajmere and Merwara, and submitted a Report on the forests in these Districts in November 1879, in which he gave a general account of the forests and described the advantages expected from their protection. Since then the forests have been managed on the lines laid down in that Report. The area of the reserves has now been increased to 139 square miles, and some further extensions are contemplated. Numerous experiments to test the effect of forest protection on the rainfall, humidity, dew, temperature, drainage, water-supply in wells, springs, streams and tanks have lately been started; in short, Ajmere has been selected as an experimental area, and the results of the observations and measurements will be of the greatest interest as regards the effects of forest conservancy generally. One point has already been settled, and that is the considerable improvement in the production of grass due to protection.

Though the forests do not yet pay for their management, the Receipts are gradually rising; they were Rs. 1,861 in 1879-80 and Rs. 8,198 in 1883-84.

Andamans.

74. The Andamans were botanically explored by the late Mr. S. Kurz, and the vegetation described by him in a Report published in 1870. Subsequently,

in 1874, Mr. A. L. Home, Deputy Conservator of Forests, visited the country in the vicinity of Port Blair and reported on its timber resources.

75. Forest operations were commenced some years ago, in order to supply the Settlement with the necessary timber, and gradually an attempt was made to bring the more valuable species of timber into the Indian and Home markets; and as the operations promised to become of importance, a trained Forest Officer was set aside for the Andamans in 1882. The islands are said to be rich in timber, of which Padouk, *Pterocarpus indicus*, is the most important. The latter has been introduced into the Calcutta market, chiefly as scantlings, and it has also been sent home. Arrangements have lately been made to supply the Indian Telegraph Department with posts, while sleepers have been supplied to the Indian Railways for some years past.

The Forest Officer is now engaged in a detailed examination of the timber resources of the islands, while further attempts are being made to extend the export.

Biluchistan.

76. The necessity of forest conservancy in Biluchistan made itself felt as soon as the District came under British control. Accordingly a Forest Officer has been temporarily entertained since 1880, and certain tracts situated in the vicinity of Sibi were taken under conservation. During the last two years more vigorous action has been taken by the Government, owing to the scarcity of forest produce in the vicinity of the military stations, and in 1883 a specially qualified Forest Officer was deputed to report on the whole subject. It has thus come to light that, while an area of 200 square miles of Juniper forests is available near Ziarat, the existing sources in the vicinity of Quetta will not yield more than twelve years' supply of forest produce for that station. A trained Forest Officer has now been posted to Biluchistan, whose business it will be to manage the existing natural forests in Ziarat and near Sibi; and the advisability of making considerable plantations in the vicinity of Quetta and other military stations is under consideration. The Railway now under construction from Sibi to Quetta will also require large quantities of timber and fuel, and no time must be lost in advancing forest operations.

Berar.

77. Up to the year 1879-80 an area of 1,388 square miles had been declared Reserved or State Forests under the existing Forest Rules, while 2,077 square miles were classed as District Forests.

It has already been mentioned that a new Forest Regulation has been under consideration for some time, and that it is likely to shortly become law. In the meantime, much time and trouble have during the last few years been devoted to the re-classification of all waste lands by dividing them into—

(i) Wood lands.
(ii) Grass lands.
(iii) Grazing grounds.
(iv) Lands available for the extension of cultivation.

78. Dr. Schlich visited Berar in the spring of 1883, and in his Report showed that the general distribution of lands is as follows:—

	Area, in square miles.
Cultivated	11,346
Culturable waste	1,713
Unculturable waste	4,652
Total ...	17,711

About two-thirds of the land are under cultivation. It is estimated that an area of 4,000 square miles under forest, or about one-fourth of the total area, is necessary for the requirements of the province, and as the total area at the disposal of Government amounts to 4,395 square miles, it is evident that only limited portions of it can be made available for further extension of cultivation.

79. The area of reserves has now been increased to 1,635 square miles, and the organization of the staff has lately been perfected by connecting the Forest Officers with the Civil Officers. The area protected against fire has, during the last five years, risen from 716 to 972 square miles, and the area of plantations from 1,504 to 2,660 acres. The Receipts are about the same now as they were five years ago, while the Surplus is somewhat lower.

The Melghat Reserves, covering an area of 609 square miles, are most valuable estates, which have been very considerably improved during the last five years by fire protection, planting, the construction of roads, &c. They will yield a gradually increasing revenue, which is sure to be hereafter a multiple of what it is now.

Forestry in Native States and abroad.

80. The Government of India has taken advantage of every opportunity to encourage forest conservancy in Native States. In 1881 Mr. Brandis advised the Kapurthala State regarding their forests in Oudh. A superior Forest Officer of the staff under the Government of India is at this moment Conservator of Forests in Rewah. A Forest Ranger has been made over to Oodeypore, and several men sent by Native States are now under training at the Dehra Dun Forest School. It is satisfactory to notice that the importance of forest conservancy is being recognised in all the better governed Native States.

81. During the last five years the Government of India has assisted the Governments of the Mauritius, Ceylon, Cyprus, and the Cape, to all of which places Indian Forest Officers were lent for the purpose of advising them on forest conservancy, or of assisting them to carry it into effect.

General Results.

82. The following data show the progress made during the last five years in the formation of reserved forests, fire protection, and plantations, with the financial results, in the provinces under the Government of India :—

		Years.	
		1879.	1884.
Area of reserved forests (in square miles)		31,785	36,197
Area protected against fire („ „)		3,710	4,776
Area of plantations (in acres)		30,565	43,453
Receipts	Rs.	49,18,957	73,73,315
Surplus	„	17,36,937	30,14,774

83. The Financial Results in the three presidencies were as follow :—

Presidency.	Receipts.		Surplus.	
	1879-80.	1883-84.	1879-80.	1883-84.
	Rs.	Rs.	Rs.	Rs.
Bengal	49,18,957	73,73,315	17,36,937	30,14,774
Madras	6,26,168	9,53,704	77,641	1,66,971
Bombay	15,24,712	25,03,100	4,17,723	9,38,928
Total ...	70,69,837	1,08,30,119	22,62,301	41,50,673

The Receipts have, during the last five years, increased by more than 37½ lakhs, and the net Surplus by nearly 19 lakhs of rupees. Expressed in pounds sterling, the Receipts amount roughly to one million pounds, and the net Surplus, after meeting cost of establishments, working, protection, and improvement, to four hundred thousand pounds.

CHAPTER I.

Area and Boundaries.

General.

84. The following table exhibits the forest areas, the property of Government, which were partially or entirely under the management and control of the Forest Department on the 1st April 1884:—

Province. Name.	Area, in square miles.	Forest area, in square miles. Reserved Forests.	Protected Forests.	District Forests.	Total.	Percentage of forests to whole area of province.	Remarks.
Bengal	1,50,603	4,635	2,300	4,325	11,260	7·47	
North-Western Provinces and Oudh.	1,06,080	3,331	99	118	3,548	3·34	
Punjab	1,07,010	1,022	311	2,910	4,243	3·97	
Central Provinces ...	84,445	*19,429	...	319	19,748	23·39	* 3,435 square miles are 1st class reserves; the rest 2nd class.
British Burma ...	87,220	†3,759	...	...	3,759	4·31	† 413 square miles are taungya areas.
Assam	45,838	2,314	863	6,422	9,599	20·96	
Coorg	1,583	233	...	...	233	14·72	
Ajmere	2,711	139	...	...	139	5·13	
Biluchistan	...	...	...	8	8	...	
Total ...	5,85,490	34,862	3,573	14,102	52,537	...	
Berar	17,711	•1,635	...	2,760	4,395	24·82	
Total Bengal Presidency ...	6,03,201	36,497	3,573	16,862	56,932	...	
Madras	1,30,365	2,870	...	...	2,870	2·06	
Bombay	1,24,182	9,398	5,012	...	14,410	11·60	
Grand Total ...	8,66,748	48,765	8,585	16,862	74,212	...	

85. The area of reserves, the only class of forests the permanency of which has been entirely secured, though aggregating 48,765 square miles, amounts to little more than 5½ per cent of the total area of British India, and is but very unequally divided amongst the several provinces, as may be seen from the following statement:—

Province.	Percentage of reserved forest area.
Bengal	3·08
North-Western Provinces and Oudh	3·14
Punjab	·96
Central Provinces	23·01
British Burma	4·31
Assam	5·05.
Coorg	14·72
Ajmere	5·13
Biluchistan	...
Berar	9·23
Madras	2·06
Bombay	7·57

The statement regarding the area of district forests, being merely an estimate, has in this year's table been reduced by nearly 2,000 square miles. This change is partly due to the formation of reserves, partly to corrections in the estimate, and partly to the retransfer of forest areas to district management; for, in that respect, the above table contains only a portion of all forest lands still at the disposal of Government.

86. The following increase has taken place in the reservation of forest areas during 1883-84 :—

	Square miles.
Reserves	873
Protected forests	15
Total ...	888

The changes that have taken place during the year are distributed amongst the several provinces in the following manner :—

Province.	AREA, IN SQUARE MILES.					
	Reserved Forests.		Protected Forests.		Total.	
	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.
Bengal	313	...	...	25	288	...
North-Western Provinces and Oudh ...	41	...	...	...	41	...
Punjab	125	...	...	...	125	...
Central Provinces	...	1	...	...	...	1
British Burma	332	...	...	...	332	...
Assam	137	...	201	...	338	...
Coorg	...	...	...	...	...	...
Ajmere	17	...	...	...	17	...
Total ...	965	1	201	25	1,141	1
Berar	246	...	...	...	246	...
Total Bengal Presidency ...	1,211	1	201	25	1,387	1
Madras	88	...	...	...	88	...
Bombay	...	425	...	161	...	586
Grand Total ...	1,299	426	201	186	1,475	587

87. In addition to the Government forests enumerated in the foregoing paragraphs, the Forest Department is in charge of a considerable area of leased forests, in which up to the end of the year the following reserves, constituted similarly to reserves under the Indian Forest Act, have been formed :—

Province.	From whom leased.	Area, in square miles.		Remarks.
		Total area of forest leased.	Specially reserved.	
North-Western Provinces and Oudh.	Tehri-Garhwal Jaghirs ...	...	17	The area reserved on the Bhagirathi is not given in the North-Western Provinces and Oudh Report.
	Raja of Tehri-Garhwal ...	...	30	
	Raja of Bashahr ...	...	2	
Punjab	Raja of Bashahr ...	...	180	
	Raja of Chamba ...	...	196	
Total Bengal Presidency ...	.....	...	425	
Madras	Raja of Sandur ...	62½	...	
	Raja of Nilambur ...	200	...	
Grand Total ..	.....	262½	425	

88. The cost of demarcation and maintenance of old boundary lines during the year was as follows :—

	Rs.
In the Bengal Presidency	66,636
„ Madras „	17,975
„ Bombay „	5,968
Total ...	90,579

At the same time the following amounts were paid as compensation on account of land acquired and rights commuted :—

	Rs.
Bengal Presidency	12,288
Madras „	8,366
Bombay „	20,890
Total ...	41,544

Bengal.

89. The changes in the areas under the management of the Forest Department during the year under review were as follows :—

Class of forests.	Area, in square miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved forests	4,322	313	.....	4,635
Protected „	2,325	25	50	2,300
District „	5,107	20	802	4,325
Total ...	11,754	358	852	11,260

The bulk of the additions, 267 square miles, occurred in Orissa, where the Angul Forests have now been brought under the operation of Chapter II of the Indian Forest Act. The area of reserves represents now about 3 per cent. of the total area of the province. Some of the finest sal forests in India in the Khondmals of Bod in Orissa were examined. They are situated within the sphere of probable railway extension, and must, even at the risk of some inconvenience, be secured and brought under reservation at as early a date as possible. The Government of India has noticed the great importance of this question in its review of the Bengal Forest Report. Corrections of previous estimates and returns have caused large exclusions under the head of District Forests.

The following data show the work done with regard to forest demarcation :—

	Length of boundary, in miles.	Cost per mile, in rupees.
New demarcation	111	8
Clearing old boundaries and repairing boundary marks. ...	559	13

The new demarcation took place mainly in Orissa, where labour is cheap; the repairs in Darjeeling and Jalpaiguri, where the reverse is the case.

North-Western Provinces and Oudh.

90. The changes in the statement below are due to the exclusion of leased forests in the School Circle from the area of reserves, and the addition of 42

square miles of new reserves in Gorakhpur. The reserves now represent about 3 per cent. of the total area of the province :—

Circle.	Area of reserved forests, in square miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Central	1,473	1	...	1,474
Oudh	1,090	42	.....	1,132
School	727	.....	2	725
Total ...	3,290	43	2	3,331

In addition to the above, the area of reserved forests formed under leases amounts to 49 square miles.

No alterations have taken place in the areas of protected and district forests, the Central Circle alone containing 99 square miles of the former and 118 square miles of the latter.

The areas still at the disposal of Government, which might be constituted reserved forests, are very limited, and it cannot be expected that the reserves will, unassisted by supplies from private forests, suffice to meet the demands of the country, with regard to the supply of timber and other forest produce. That private forests, if left to unrestricted management, will some day cease to yield their share of the forest produce required by the market, is an eventuality we dare not leave out of consideration, and the question of augmenting the forest area under conservative management must not be lost sight of. Whether this is to be done by the acquisition of land on the part of Government, or by interference with the management of private forests, is a question that will have to be considered at an early date.

The demarcation of the forests in the Central and School Circles is reported as complete and well maintained. In the Oudh Circle also the work is nearly finished; but it is stated that for about 200 miles the boundary is a shallow trench, and that some more permanent demarcation is required.

Punjab.

91. The following statement exhibits the changes that have taken place during the year in the areas under the management of the Forest Department :—

Class of forests.	Area, in square miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved forests	897	125	...	1,022
Protected „	311	...	...	311
District „	3,155	1	246	2,910
Total ...	4,363	126	246	4,243
Reserved forests formed under leases ...	331	45	...	376
Grand Total ...	4,694	171	246	4,619

The increase in reserves took place in the Salt Range, and 45 square miles were added to the reserved forests formed under the lease of the Bashahr Forests.

The forest settlement in the Rawalpindi District is well advanced, and will, if completed on the lines on which it has been begun, add a considerable and valuable area to the forest reserves of the province.

The settlement of the valuable deodar forests in Kulu will, it is feared, not materially increase the area of permanently-settled reserves, which at present represent only 0·96 per cent. of the area of the province.

The changes in the area of district forests are due to the constitution of forest reserves and to the re-transfer of some forest areas from the management of the Forest Department to that of district authorities, who still control some 12,271 square miles of the forest lands at the disposal of Government.

The demarcation of forests has received attention during the year, but even now seems not completed in parts of the Hazara, Rawalpindi, and Jhelum Divisions, where the forest settlement was finished some years ago.

Central Provinces.

92. During the year 842 square miles of second class reserves were transferred to the first class, and an additional 644 square miles were examined as a preliminary to such transfer.

The changes made during the year are exhibited as follows:—

Class of forest.	Area, in square miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
First class reserves	2,593	842	...	3,435
Second „ „	16,837	...	843	15,994
Total reserves ...	19,430	842	843	19,429
District forests	318	1	...	319

A steady progress in the transfer of second class reserves to those of the first class may now be confidently expected, till the greater portion has thus been settled as first class reserves.

Good progress has been made in the external demarcation of second class reserves, but the demarcation of enclosed blocks of cultivation still requires attention.

British Burma.

93. The subjoined table shows the changes that have taken place in the areas of forest reserves:—

	Area, in square miles.		
	Forest area.	Taungya area.	Total.
Reserved on 1st April 1883	3,029	398	3,427
Added during the year	318	14	332
Total on 1st April 1884 ...	3,347	412	3,759

These areas are divided between the two Circles as follows:—

Circle.	Area, in square miles.		
	Forest area.	Taungya area.	Total.
Pegu	2,640	400	3,040
Tenasserim	707	12	719

The proportion of reserved forests to the total area of the province is less than 4½ per cent., but further reservations were contemplated at the close of the year. The reservation in the Pegu Circle is on a much larger scale, and is carried out on broader principles, taking the future development of the country into consideration, than in Tenasserim where little more than the sources of the present market-supply have been formed into reserves, which at some future period may probably necessitate the reopening of the settlement proceedings.

Considerable attention has been paid to the demarcation of the forest reserves; but the boundary lines, being of a more or less temporary nature, require constant revision.

Assam.

94. The changes in the areas under the control of the Forest Department are as follows:—

Class of forest.	Area, in square miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved forests	2,177	137	...	2,314
Protected „	662	201	...	863
District „	6,766	...	344	6,422
Total ...	9,605	338	344	9,599

The addition to the reserves occurred mainly in the Garo Hills, Sibsagar, and Goalpara.

The area of reserves amounts to only 5 per cent. of the area of the province. The whole of the forests under departmental control represent 21 per cent., but they are very unevenly distributed over the province. The demarcation of the forests is reported to be in a satisfactory state. The total length of the forest boundaries amounts to 834 miles, and of these, 758 miles were cleared during the year and 560 miles inspected by divisional officers.

Coorg.

95. No c made during the year in the area of reserved forests. The demarcation and boundary surveys of the ghat forests are still incomplete, and it seems now that it is considered that all the old reserves require a readjustment of rights, a proceeding which practically amounts to a resettlement. The law under which this procedure is to take place has still to be settled.

Ajmere.

96. The area of forest reserves has been increased during the year by 17 square miles. The total area now amounts therefore to 139 square miles; but at the same time it is reported that only a very limited further extension can still take place, so that it can scarcely be hoped to increase the area of State Reserves to above 5 per cent. of the area of the country. This forest area is insufficient to permanently supply the requirements of the two districts

of Ajmere and Merwara, and arrangements must be made sooner or later to provide for such demand, either by the constitution of village forests or interference with the management of private forest property. The demarcation of boundaries is reported as completed, but it is as yet of a temporary character.

Berar.

97. The areas under the control of the Forest Department have undergone the following changes :—

Class of forests.	Area, in square miles.			
	At the commencement of the year.	Increase.	Decrease.	At the close of the year.
State reserves	1,106	2	...	1,108
District ,, ...	283	244	...	527
Unreserved forests	2,955	...	195	2,760
Total, ...	4,344	246	195	4,395

The changes are mainly due to the transfer of areas from unreserved forests to the class of district reserves.

Madras.

98. The area of reserves in the Madras Presidency is reported as 2,870 square miles; but these figures represent the areas locally classed as reserves, and not only those constituted reserves under the Madras Forest Act, No. V of 1882. Of this latter class, 683 square miles have been formed in the Southern Circle, and proposals have been made for further extensions during the present year.

Bombay.

99. The following table exhibits the changes that took place during the year in the areas under the control of the Forest Department :—

Class of forests.	Area, in square miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved forests	9,823	...	425	9,398
Protected ,, ...	5,173	...	161	5,012

The areas remaining at the close of the year were distributed over the three Circles, as follows :—

Circle.	Area, in square miles.		
	Reserved forests.	Protected forests.	Total.
Northern	6,972	1,498	8,470
Southern	1,800	3,514	5,314
Sind	626	...	626
Total ...	9,398	5,012	14,410

100. The progress made in the demarcation and settlement of forests has again been most satisfactory, and, if continued, the early completion of the settlement may be looked forward to with confidence.

The area finally settled and disposed of up to the end of the year amounts to 6,985 square miles.

CHAPTER II.

Surveys and Working Plans.

SURVEYS.

101. The principal operations of the Forest Survey Branch took place in the Melghat of Berar and in Garhwal in the North-Western Provinces. Small parties were detached for work in South Berar, in Dehra Dun and Saharanpur in the North-Western Provinces, and the Chamba leased forests in the Punjab.

The outturn of plane-table work amounted to only 74 square miles, as compared with 361 square miles during the previous year; and this shorter outturn of work is hardly sufficiently compensated by a triangulation of 1,103 square miles, the traversing of 566 square miles, and the survey of 111 linear miles of boundary. Some of the survey parties took the field rather late in the season. The expenditure during the survey year amounted to Rs. 48,156 against Rs. 49,327 during the previous year.

102. In British Burma the topographical Survey Department has surveyed during the year 221 square miles on the scale of 4″ to the mile, at a cost of Rs. 315 per square mile, and 52 square miles on the 2″ scale, costing Rs. 175 per square mile. The cost is still very heavy and much above the estimated average cost of Rs. 135 per square mile; but the difficulties which have to be surmounted in this work are reported as quite exceptional.

The forests to be reserved in the Rawalpindi Division of the Punjab are being surveyed during the settlement, which is in course of progress.

WORKING PLANS.

103. The vital importance having been recognized of working, on a preconsidered plan, forest areas which have been permanently secured to Government, it has now been decided that working plans shall be prepared for every reserved forest or a collection of reserved forests, as well as for the more important protected forests under the control of the Forest Department.

It has been recognized that this duty cannot in most cases be carried out by the local Forest Officer in charge of a Division and by his assistants, and special working plans Divisions are therefore gradually being organized in several provinces.

During the year a working plans Division was established in the Punjab and was attached to the Conservator's office.

104. From Burma a thoroughly practical working plan for the Thonzé Reserve was submitted; but no final plans have as yet been received from either the North-Western Provinces or the Punjab, though it may be gathered from reports on that subject that much information and valuable data for the preparation of working plans have been collected, and it is hoped that the present year will see the completion of several such plans. The control over the preparation of working plans has been centralized and placed directly under the authority of the Inspector General of Forests.

CHAPTER III.

Protection and Improvement.

I.—GENERAL PROTECTION.

105. The following statement shows that 19,293 offences were taken cognizance of under the Forest Acts; that 14,427 of these were compounded, which may be accepted as a proof of admission of guilt on the part of the offenders; and that 4,866 cases were taken into Court, resulting in an average conviction of 80 per cent. These figures appear to prove a fair and just application of the penal sections of the Forest Act:—

Province.	Number of new cases during the year.			Proportion of convictions to total number of cases decided by the Courts, in per cent.
	Taken into Court.	Compounded.	Total.	
Bengal	413	1,816	2,229	89
North-Western Provinces and Oudh.	157	557	714	82
Punjab	968	298	1,266	77
Central Provinces	341	9,850	10,191	82
British Burma	193	57	250	87
Assam	80	45	131	65
Coorg	8	...	8	86
Ajmere	31	36	67	90
Biluchistan	2	20	22	100
Total ...	2,199	12,679	14,878	81
Berar ...	381	...	381	83
Total Bengal Presidency ...	2,580	12,679	15,259	82
Madras	1,136	...	1,136	81
Bombay	1,150	1,748	2,898	75
Grand Total ...	4,866	14,427	19,293	80

Bengal.

106. There has been a large increase in the number of cases taken into Court for breaches of forest rules, as exhibited in the statement below: but, as the convictions amount to 89 per cent., this can only be the result of an improved protection of the forests and the entertainment of a regular establishment in Orissa:—

Year.	Number of new cases.		
	Taken into Court.	Compounded under section 67 of the Forest Act.	Total.
1883-84	413	1,816	2,229
1882-83	134	1,069	1,203
Increase in 1883-84	279	747	1,026

The number of forest offences is as yet small, only one case occurring on an average in every 5 square miles.

North-Western Provinces and Oudh.

107. The following table exhibits the cases of breaches of forest rules in the several Circles of the North-Western Provinces and Oudh and the percentage of convictions obtained:—

Circle.	Number of new cases.			Percentage of convictions to total number of cases brought before the Courts.
	Taken into Court.	Compounded under section 67 of the Act.	Total.	
Central	84	456	540	89
Oudh	59	23	82	80
School	14	78	92	17
Total in 1883-84 ...	157	557	714	82
1882-83 ...	141	436	577	84
Increase or decrease in 1883-84 ...	16	121	137	—2

The number of cases is extremely small. In the School Circle only 14 cases were taken into Court; but of this small number convictions were obtained in less than half, which discloses an unsatisfactory management in the working of the penal sections of the Act.

Punjab.

108. The number of cases of breaches of forest rules shows a total of 1,266 offences. Of these, 298 were compounded and 968 were taken to Court, resulting in 77 per cent. of convictions. No comparison can be made with the figures of former years, as the number of cases compounded is now given for the first time. The percentage of convictions is slightly below the average.

Central Provinces.

109. The following table exhibits the cases of breaches of forest rules brought to notice during the year under review :—

Year.	Number of cases.		Total.
	Taken into Court.	Compounded under section 67 of the Forest Act.	
1883-84	341	9,850	10,191
1882-83	635	8,921	9,556
Increase or decrease in 1883-84	—294	929	635

The number of cases taken into Court has largely decreased, and resulted in 82 per cent. of convictions, which is satisfactory. The increase in the number of cases compounded is due to additional restrictions having been introduced in the Sambalpur District.

British Burma.

110. The breaches of forest rules brought to notice during the year stand as follows :—

Circle.	Number of new cases.			Percentage of convictions to total number of cases decided by the Courts.
	Taken into Court.	Compounded.	Total.	
Pegu	116	56	172	87
Tenasserim	77	1	78	86
Total ...	193	57	250	87

There has been an increase in the number of forest offences, which however, considering the extent of the forest area, are very few. A large increase of timber thefts on the rivers in Tenasserim has been reported. The percentage of convictions in both the Pegu and Tenasserim Circles is very satisfactory.

Assam.

111. Only 131 cases of breaches of forest rules were noticed during the year, of which 45 were compounded and 86 taken into Court, resulting in 65 per cent. of convictions. Considering that 9,599 square miles are managed under the provisions of the Forest Act, the number of offences brought to notice is extremely small.

Coorg.

112. The number of cases of forest offences taken into Court amounted only to 8. In 6 of these convictions were obtained, 1 case was dismissed, and 1 was pending at the close of the year. It has already been stated in last year's Review that the small number of forest offences is due to the liberal way in which the people have been provided with forest produce for all their domestic wants.

Ajmere.

113. The cases of breaches of forest rules amounted to 67 against 62 in the previous year, and the number of cattle impounded for trespass to 3,643 against 3,736 in 1882-83.

Berar.

114. The number of cases of breaches of forest rules has decreased, and amounted to 381 in the year under review against 437 noted during the previous year. The percentage of convictions, though showing a slight falling off during the year, amounts still to 83 per cent., and is consequently above the average.

Madras.

115. The number of cases of breaches of forest rules disposed of by the Courts amounted to 1,084, resulting in 874 convictions, the percentage of convictions being consequently above the general average.

The number of cases and convictions is very equally divided between the two Circles, the Southern exhibiting 563 cases with 449 convictions, and the Northern 521 cases with 425 convictions.

Bombay.

116. A considerable decrease in the number of prosecutions for forest offences has taken place.

The following table exhibits the number of cases taken cognizance of and the way in which they have been disposed of :—

Circle.	Number of new cases during the year.			Percentage of convictions.
	Taken into Court.	Compounded.	Total.	
Northern	888	750	1,638	72
Southern	198	...	...	81
Sind	45	998	1,043	69
Total in 1883-84 ...	1,131	...	...	73
Total in 1882-83 ...	1,979	...	...	73
Decrease in 1883-84	848	...	...	...

II.—PROTECTION FROM FIRE.

General.

117. The following table exhibits the areas under fire protection and the results of the year's operations :—

Province.	Area in square miles.		Percentage of failures to area attempted.	Cost.		Year when fire conservancy commenced.	Proportion of area under fire protection to total area of reserves, in per cent.
	Attempted.	Actually protected.		Per square mile protected.	Per acre protected.		
				Rs.	Pies.		
Bengal	828	768	7	21	6	1872	18
North-Western Provinces and Oudh ...	959	874	9	43	13	1869	28
Punjab	76·5	70	8	8	2	1871	6
Central Provinces ...	1,429	1,366	4	13	4	1864	7
British Burma ...	286	261	9	54	16	1857	9
Assam	209	148	29	64	19	1873	9
Coorg	193	178	8	11	3	1876	83
Ajmere	139	139	...	4	1½	1874	100
Total ...	4,119·5	3,804	8	24	7	...	12
Berar	1,048	972	7	7	2	1870	64
Total Bengal Presidency	5,167·5	4,776	8	21	6	...	14
Madras	901	865	4	11	3	1867	31
Bombay	12,059	9,929	18	½	...	...	...

The above table shows that again 1¼ per cent. of the reserves in the Bengal Presidency and 31 per cent. in Madras were specially fire protected. This does not however embrace the whole area that was not burned during the year, as, especially in Bengal and the north of India, considerable areas are, as a rule, free from fires though not specially protected.

118. The beneficial influence that protection from fire exercises, not only on the reproduction of a forest, but also with regard to its productive powers and the more rapid growth of forest produce, grass, and shrubs, as well as wood, &c., can now be demonstrated *ad oculos* in almost any part of British India; and it can be shown that money spent under this head yields almost invariably a better return than any other outlay on forest conservancy.

This fact once acknowledged, it is clearly our duty to increase the fire protected area as much as possible and to extend, when the opportunity arrives, the undoubted blessing of fire protection even to areas beyond our present sphere of control, the very limit of which still causes a great deal of expense and uncertainty. How fire protection is ultimately to be extended to private forests and waste lands, is a question which must sooner or later be considered. The provisions of the Forest Acts and the Penal Code are insufficient in that respect.

The work in the Government forests must increase gradually, and in proportion to the means and power at our disposal to ensure the entire safety of the areas already protected. The failures in the Bengal Presidency amounted to 8 per cent. of the area under actual fire protection, which, though an increase of 3 per cent. above last year's result, is still below the quinquennial average ending last year.

Bengal.

119. The area in which fire protection was attempted, as well as that successfully protected, has been considerably increased, as may be gathered from the subjoined table :—

Year.	Area, in square miles.			Percentage of failures to area attempted.	Cost per square mile.
	Attempted.	Failures.	Actually protected.		
					Rs.
1883-84	828	60	768	7	21
1882-83	667	61	606	9	19
Increase or decrease in 1883-84	161	—1	162	—2	2

The area under protection amounts to only 18 per cent. of the area of reserves; but as the Sunderbans reserves are not liable to be burned, and as the Chittagong and Darjeeling forests do not suffer much from conflagrations and do not therefore require any special protection, the area at present free from forest fires represents 50 per cent. of the reserves which ought doubtless to be entirely protected, and which must ultimately be protected. The work of fire protection has only been lately started in Hazaribagh, Singbhoom and Orissa, and here much remains to be done before this important branch of forest work has been satisfactorily developed. In Palamow and the northern divisions in the Darjeeling and Jalpaiguri Districts a successful system of fire protection seems to be fairly established.

North-Western Provinces and Oudh.

120. The results of fire protection are exhibited in the following table :—

Circle.	Area, in square miles.			Percentage of failures to area attempted.	Cost per square mile successfully protected.
	Attempted.	Failures.	Successfully protected.		
					Rs.
Central	417	16	401	4	45
Oudh	295	64	231	22	45
School	247	5	242	2	30
Total in 1883-84 ...	959	85	874	9	43
Total in 1882-83 ...	937	17	920	2	38
Increase or decrease in 1883-84	22	68	—46	7	5

The results compare unfavourably with those of the previous year. The percentage of failures has risen from 2 per cent. to 9 per cent., and the

cost has consequently increased from Rs. 38 to Rs. 43 per square mile. The unfavourable results of the year are almost entirely due to want of success in Oudh, where one-half of the protected area of the valuable forest in the Kheri (trans-Sarda) Division has been burnt over, which is especially unfortunate, as heavy fellings had been made in them during the last two years, which made protection more than ever desirable. The season has been described as specially dry. The total area protected amounts to 28 per cent. of the reserved forest area.

Punjab.

121. As a rule, no special measures are taken to protect the forests in the Punjab against fire; but, during the year under review, an area of 17 square miles has again been overrun by forest fires; and if the steps contemplated to meet this difficulty, *viz.*, the entire and immediate closing against grazing of all areas that have been burned, do not result in greater security for the forests, the advisability of introducing artificial fire protection in the most exposed forest areas will have to be considered. The forests which suffer most frequently and severely are those of *Pinus longifolia* in the Hazara, Rawalpindi, and Beas Divisions.

Central Provinces.

122. The results of the year's fire protection are shown in the following table :—

Year.	Area, in square miles.				Cost per square mile of area actually protected.
	Attempted.	Failures.	Actually protected.	Proportion of failures to area attempted.	
					Rs.
1883-84	1,429	63	1,366	4	13
1882-83 ...	1,426	36	1,390	3	11

The results of fire protection during the year are not quite so favourable as they were in the previous year, and it is reported that this was due to a series of fires which were lighted by dacoits in the Chandgarh Reserve.

The area protected from fires amounts as yet to only 7 per cent. of the total area of forest reserves; but efforts are made to increase this percentage by the protection of extensive areas of second class reserves, which is considered feasible without the clearing of fire lines.

British Burma.

123. The results of fire protection, as compared with those of the previous year, were as follows :—

Circle.	Area, in square miles.			Percentage of failures to area attempted.	Cost per square mile.	Proportion of area under fire protection to total area of reserves, in per cent.
	Attemped.	Failures.	Protected.			
					Rs.	
Pegu	164	3	161	2	67	6
Tenasserim	122	22	100	18	31	17
Total in 1883-84 ...	286	25	261	9	54	9
„ 1882-83 ..	211	31	180	15	70	7
Increase or decrease in 1883-84.	75	—6	81	—6	—16	2

Notwithstanding an unfavourable season, the results of the year show a decided improvement on last year's work. The area protected was larger, and the

percentage of failures, and consequently the cost per square mile of successfully protected forests, were smaller. As yet, however, only 9 per cent. of the total area of the forest reserves are protected from fire, and it is evident that, before the well-being of the forests can be regarded as secured, steps must be devised to protect a very much larger area at a very much reduced cost.

Assam.

124. The following were the results of fire protection during the year:—

Area attempted	209 sq. miles
„ burnt	61 „
„ actually protected	148 „
Percentage of failures to area attempted	29 per cent.
Cost per square mile actually protected	61 rupees.

The result of fire protection has not been satisfactory during the past three years, and less so during the year under review than in the previous one. The percentage of failures has risen from 26 to 29 per cent., and the cost of each square mile successfully protected has consequently increased from Rs. 58 to Rs. 61. The failures have again taken place chiefly in the valuable and important sal forests in the Eastern Duars.

Coorg.

125. The results of fire protection were again satisfactory, and show, in spite of an unfavourable season, a slight improvement on last year's work:—

	1882-83.	1883-84.
Area attempted	193 sq. miles	193 sq. miles.
„ burnt	16 acres	15 „
„ actually protected...	193 sq. miles	178 „
Percentage of failures to area attempted ...	*Nil*	8 per cent.
Cost per square mile actually protected ...	13 rupees	11 rupees.

Ajmere.

126. The whole area of forest reserves, amounting to 139 square miles, has been successfully protected against fire, at a cost of about Rs. 4 per square mile. Nothing could be more satisfactory.

Berar.

127. The following table exhibits the results of the year's fire protection in comparison with those of the previous year:—

Year.	Area, in square miles.			Proportion of failures to area attempted, in per cent.
	Attempted.	Protected.	Failures.	
1883-84	1,048	972	76	7
1882-83	1,034	973	61	6
Increase or decrease in 1883-84 ...	14	—1	15	1

The valuable Melghat Reserves have again been successfully protected, which is satisfactory; but the results of the year are on the whole somewhat

less favourable than in 1882-83, which is due, to a great extent, to the burning of a large portion of the Kelapur Reserve in the Wun District.

Madras.

128. The following statement shows the results of fire conservancy during the year, as compared with those of 1882-83 :—

Year.	Area, in square miles.		Proportion of failures to area attempted.
	Attempted.	Failures.	
1883-84	901	36	4
1882-83	609	40	7
Increase or decrease in 1883-84	292	—4	—3

The results of the year under review are in every respect more favourable than those of the previous year, and the cost of protection has at the same time been reduced from Rs. 18 to about Rs. 11 per square mile.

The area protected is as yet very small for a province like Madras, and it is hoped that the adoption of measures for its steady increase will receive the continued attention it deserves.

Bombay.

129. The results of fire protection are reported as follows :—

Circle.	Area, in square miles.		Proportion of failures, in per cent.
	Area attempted.	Area burnt.	
Northern	8,470	1,393	16
Southern	3,158	724	23
Sind	431	13	3
Total ...	12,059	2,130	18

It would thus appear that 9,929 square miles were successfully protected for Rs. 3,518, or at the rate of one-third of a rupee per square mile. The area probably contains a large proportion of forests naturally free from fires, and it is hoped that future Reports will deal with the subject of fire protection in somewhat greater detail.

III—REPRODUCTION OF THE FORESTS.

General.

130. The income from the Indian forests is, for various reasons, not as yet—and on account of the manifold servitudes with which the forests are frequently burdened and the consequent absence of a local market, probably never will be—sufficiently high per acre to warrant, as a rule, the outlay on artificial cultural operations on a large scale, except in places particularly favourably situated for forest growth, as well as export. Natural reproduction, assisted by fire conservancy, closure against grazing, and general protection, are therefore, in most instances, the means we have to rely on for the maintenance and improvement of forest growth.

The beneficial results of such protection are now showing themselves throughout the Empire, and are specially noticed in almost every Provincial Forest Report under review; they have, in several instances, surpassed the expectations which were entertained with regard to the increase of reproduction by protection unsupported by cultural operations. The records of these observations are satisfactory, as they gradually form a basis of facts on which proposals for a more extensive fire conservancy and stricter protection throughout can be entertained. The value of such, and especially of comparative records with regard to natural reproduction in protected and other forests, will increase with every year that such data are kept.

As already remarked, artificial cultivation in specially favourably situated areas may be financially remunerative and is consequently desirable. In other localities it may be necessitated by circumstances; for instance, near the climatic extremes of forest growth; where the ground is covered by a dense growth of grass or weeds; where one chosen and selected species of tree is extracted out of a mixed forest, the other representatives of which cannot be disposed of; where no parent trees exist, or none of the kind it is desirable to propagate; where, by reason of the expense of large works connected with export, it is necessary to concentrate exploitation, both as regards area and time.

131. The area of cultural operations is exhibited in the following table:—

Province.	Area, in acres.			
	At the commencement of the year.	Added during the year.	Excluded during the year.	At the close of the year.
Bengal	2,439	329	200	2,568
North-Western Provinces and Oudh	3,611	106	...	3,717
Punjab ...	16,389	2,172	...	18,561
Central Provinces	...	...	...	...
British Burma	11,312	2,103	...	13,415
Assam	1,262	34	...	1,296
Coorg	589	241	...	830
Ajmere	355	...	...	355
Biluchistan	20	31	...	51
Total ...	35,977	5,016	200	40,793
Berar	2,310	350	...	2,660
Total Bengal Presidency, ...	38,287	5,366	200	43,453

The entries for Madras have been omitted, as they are still open to correction; and no data are available as regards Bombay.

Bengal.

132. The beneficial results of continued fire-protection and closure against grazing, as regards natural reproduction, have been very marked and encouraging; and there seems to be every hope that the improvement and perpetuity of a large portion of the Bengal forests can be secured by these means only, which

it is hoped will be extended whenever the opportunity offers itself and when closure can be effected without undue hardship to the people. The record of artificial reproduction stands as follows :—

	Area, in acres.			
	At the commencement of the year.	Added.	Excluded	At the close of the year
Regular plantations	1,379	321	...	1,700
Other cultural operations	1,060	8	200	868
Total in 1883-84	2,439	329	200	2,568
„ 1882-83	2,005	434	..	2,439

The above shows an increase of 321 acres of regular plantations and of 8 acres of other cultural operations during the year. The total area planted up to the end of the year amounts, however, only to 2,568 acres, as 200 acres which had been entered twice over in former returns had to be struck off.

The results of the year's operations have been satisfactory. Attention has been drawn to the cultivation of the paper-mulberry, and, if future experiments continue to show that the tree can be artificially cultivated at a reasonable cost, the planting thereof should be extended in favourable localities near lines of export, for its value as paper-stock is above doubt.

North-Western Provinces and Oudh.

133. The favourable contrast between protected forests and unprotected forests, as regards natural reproduction, has been noted by all three Conservators in the province. The Lalitpur Forest is reported, however, to be an exception to this rule, and it would be desirable if the reason of this could be ascertained by a professional examination.

The area artificially cultivated was increased from 3,611 to 3,717 acres, by the addition of 106 acres, of which 51 acres have been cultivated in the hill forest districts.

Punjab

134. Protection from fires, by rules and orders on the subject, in British territories and also in the States of Chamba and Bashahr, as well as general protection and regulation of grazing, have had the most beneficial results in the hill forests of the province, and natural reproduction has increased in all protected areas above all expectations.

Natural reproduction in *Pinus longifolia* forests, which have been successfully protected for some years, is most remarkable, as well as in the strictly protected areas in the Pabbi. Experiments are being carried out with regard to natural reproduction in the plains rakhs in the Punjab Bar. Cultural operations, shown in the table below, exhibit an increase of 2,172 acres; and have been very successful in the hills as well as in the plains :—

	Area, in acres		
	At the commencement of the year.	Added during the year.	At the close of the year.
Regular plantations	15,324	43	15,367
Other cultural operations	1,065	2,129	3,194
Total ...	16,389	2,172	18,561

Central Provinces.

135. Satisfactory progress in natural reproduction has been reported in all fire protected forests, in contrast to those burnt, where no reproduction can take place. No attempts have apparently as yet been made to utilise the services of the tribes of the Gonds and Baigas for artificial cultivation in the way the Karens are used in British Burma.

British Burma.

136. The difference in natural reproduction of the forests protected from fires and those burnt is reported as clearly perceptible.

2,103 acres have been added to the areas sown and planted. Of these, 1,939 acres were added in the Pegu Circle, and only 164 in Tenasserim. The progress of artificial cultivation in this province is highly satisfactory, as will be seen from the following table:—

	Area, in acres.		
	At the commencement of the year.	Added during the year.	At the close of the year.
Regular plantations	3,585	50	3,635
Taungya „	5,131	1,328	6,459
Other cultural operations	2,596	725	3,321
Total ...	11,312	2,103	13,415

Assam.

137. The progress made in artificial reproduction amounts to only 34 acres; but, as regards natural reproduction, it is reported that especially the sal tree is spreading with considerable rapidity wherever fire protection has been successful.

Coorg.

138. Considering the success of fire protection in Coorg, a comparison of natural reproduction in the areas successfully protected and those outside would be of great interest and value, and it is hoped that the subject will in future be noted in detail.

The teak plantations were increased by 126 acres and those of sandalwood by 107 acres.

The area planted up to date amounts therefore to—

	Acres.
Teak	429
Sandal	278
Fuel	85

The work in the year under review is reported as successful.

Ajmere.

139. Here again we find it reported that natural reproduction in protected areas increases annually, but, owing to scarcity of rain, this year's artificial reproduction failed almost entirely.

Berar.

140. Natural reproduction, it is reported, has made successful progress in all fire-protected areas. Plantations have been extended by only 20 acres, but 330 acres had to be added by way of correction of former statements; and the total results of artificial reproduction are now exhibited as follows:—

	Area, in acres.		
	At the commencement of the year.	Added.	At the close of the year.
Regular plantations	1,109	...	1,109
Other cultural operations	901	350	1,251
Total ...	2,310	350	2,660

It is proposed to extend artificial cultivation in areas favourable for growth, as well as future export.

Madras.

141. The remarks on natural reproduction in the Madras Reports are exceedingly meagre; but the little that has been said tends to prove that here also a marked improvement in reproduction has taken place in all fire protected areas.

The area of artificial plantations and cultural operations is now given in the *Southern Circle* as follows:—

	Acres.
Regular plantations	29,179
Cultural operations	4,727
Total ...	33,906

against 43,737 in the previous year. The reduction is due to corrections in the statements, which, however, are reported even now to be not quite reliable in every detail.

The corrected statement of artificially cultivated areas in the *Northern Circle* is also apparently not completed as yet, but 372 acres seem to have been added and 2,130 acres have been deducted by way of correction, leaving a balance of 6,943 from the total of 9,001 acres at the commencement of the year. The area artificially cultivated in the Madras Presidency stands therefore at present at 40,850 acres, against 62,949 acres recorded in last year's statement.

Bombay.

142. The remarks in the Reports of the three Circles of the Bombay Presidency, as regards natural reproduction, are much too vague to be of any practical value, and in future Reports the difference between natural reproduction in fire protected and unprotected forests should be specially noted.

That considerable cultural operations were again undertaken can be gathered from the Reports; but it is not possible to review the results, as the information under this head is too sketchy, and as no statements of the work are appended. It would be an advantage if tables were added in future Reports, showing the annual progress of cultural operations.

IV.—COMMUNICATIONS AND BUILDINGS.

143. The outlay under this head during the year is as follows :—

Province.	Roads and Bridges.	Buildings.	Other works.	Total.
	Rs.	Rs.	Rs.	Rs.
Bengal	10,922	14,183	268	25,373
North-Western Provinces and Oudh ...	52,236	29,650	3,345	85,231
Punjab	6,285	8,404	35	14,724
Central Provinces	2,553	1,470	671	4,694
British Burma	890	12,920	6,881	20,691
Assam	5,780	14,835	379	20,994
Coorg	548	706	...	1,254
Ajmere	550	179	...	729
Biluchistan	...	1,225	5	1,230
Forest Surveys	...	...	...	...
Total ...	79,764	83,572	11,584	1,74,920
Berar	7,562	2,173	343	10,078
Total Bengal Presidency ...	87,326	85,745	11,927	1,84,998
Madras	11,583	13,093	189	25,765
Bombay	23,006	11,828	269	36,003
GRAND TOTAL ...	1,22,815	1,11,566	12,385	2,46,766

The totals for the Bengal Presidency compare as follows with those of the four previous years :—

	Rs.
1879-80	1,66,193
1880-81	1,38,324
1881-82	1,88,027
1882-83	1,99,066
1883-84	1,84,998
Average per annum ...	1,75,322

V.—DEMARCATION AND IMPROVEMENT OF FORESTS.

144. The expenditure under these heads during the year is as follows:—

Province.	Demarcation.	Compensation for land and rights.	Surveys and working plans.	Plantations.	Protection from fire.	Other works.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	7,890	234	304	10,728	13,718	1,191	34,060
North-Western Provinces and Oudh	6,038	1,070	2,824	11,124	37,583	10,033	68,672
Punjab	23,268	10,337	77	33,721	856	2,615	70,874
Central Provinces ...	8,458	...	907	256	16,806	4,364	30,791
British Burma ...	6,530	209	5 594	33,977	12,159	498	58,958
Assam	11,252	370	6,375	7,996	9,542	7,575	43,110
Coorg	771	75	495	19,393	1,808	15	22,557
Ajmere	2	...	9	1,297	518	611	2,467
Biluchistan	239	...	...	484	...	6	729
Forest Surveys ...	...	...	5,264	... ...	...	...	5,264
Total ...	64,448	12,286	21,849	1,18,908	93,020	26,911	3,37,482
Berar	2,188	2	5,527	1,777	6,053	600	16,147
Total Bengal Presidency ...	66,636	12,288	27,376	1,20,745	99,073	27,511	3,53,629
Madras	17,975	8,366	36,990	65,326	11,223	36,793	1,76,673
Bombay	5,968	20,890	92,500	15,667	3,518	74,168	3,12,711
Grand Total ...	90,579	41,544	156,866	2,01,738	1,13,814	2,38,472	8,43,013

The following table shows the expenditure on demarcation and improvement of forests in the Bengal Presidency for the last five years:—

	Rs.
1879-80	2,55,647
1880-81	2,66,925
1881-82	3,22,440
1882-83	3,27,704
1883-84	3,53,629
Average per annum ...	3,05,271

CHAPTER IV.

Yield and Financial Results.

General.

145. The details of the financial results are exhibited in Statements I, II and III appended to this Review.

The Receipts and Surplus of the various provinces during the year under review, arranged according to the total amount of Revenue, are as follows :—

No.	Province.	Revenue.	Surplus.	Deficit	Proportion of Surplus to Gross Revenue, in per cent.
		Rs.	Rs.	Rs.	
1	British Burma ...	25,09,275	12,91,451		51
2	Bombay	25,03,100	9,38,928		38
3	North-Western Provinces and Oudh.	16,11,383	5,69,498		35
4	Central Provinces ..	9,94,709	5,58,711		56
5	Madras ..	9,53,704	1,66,971		18
6	Punjab	9,10,177	2,57,031	...	28
7	Bengal	6,91,334	3,06,521		44
8	Berar ...	3,08,217	1,51,678		49
9	Assam	2,11,145	11,883		6
10	Coorg	87,822	12,799		15
11	Imperial	32,907		65,359	...
12	Ajmere	8,198		6,376	
13	Baluchistan	4,752		12,159	
14	Forest Surveys	36	...	30,904	
	Total	1,08,80,119	41,50,673		38

Burma still heads the list, both as regards Gross Revenue and Surplus.

The total Forest Revenue has risen during the year to 108 lakhs, and the increase in Surplus Revenue amounts to nearly four lakhs, exhibiting a total of Rs. 41,50,000, or nearly double that of 1879-80.

The Surplus Revenue for the last five years is shown in the following table :—

Year.	British territory.				Berar.	Grand total.
	Bengal Presidency.	Madras.	Bombay.	Total.		
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs
1879-80 ...	15,39,043	77,641	4,47,723	20,65,307	1,96,994	22,62,301
1880-81 ..	17,81,431	2,17,610	3,55,460	23,54,501	1,37,588	24,92,089
1881-82 ...	22,58,083	2,03,489	6,58,936	31,20,508	80,526	32,01,034
1882-83 ...	25,73,624	2,61,090	8,11,583	36,46,297	1,36,960	37,83,257
1883-84 ...	28,93,096	1,66,971	9,38,928	39,98,995	1,51,678	41,50,673

Bengal.

146. The yield of the forests of the different descriptions has been compiled as follows:—

	Timber.	Fuel.	Bamboos.	Minor produce.
	Cubic feet.		No.	Maunds.
Reserved Forests.				
By Government Agency	167,691	253,008	230,830	65
„ Permit-holders	5,582,196	13,305,761	4,426,500	3,289,895
Free Grants	6,136	...	...	...
Total ...	5,756,023	13,558,769	4,657,330	3,289,960
Protected and District Forests.				
By Permit-holders	710,723	5,475,487	15,915,559	1,700,297
Grand Total ...	6,466,746	19,034,256	20,572,889	4,990,257

Compared with last year; the following table shows that there was a decrease in the outturn of timber from reserved forests, compensated, however, by an increased yield of fuel. The average outturn per square mile of reserved forests is 277 cubic feet less than in 1882-83, the area of reserves having been increased:—

Year.	Timber.	Fuel.	Total.	Per square mile.
	Cubic feet.			
1883-84 ...	5,756,023	13,558,769	19,314,792	4,167
1882-83	6,762,237	12,445,033	19,207,270	4,444
Increase or decrease in 1883-84 ...	—1,006,214	1,113,736	1,07,522	—277

The timber and fuel removed from the protected and district forests without payment cannot be estimated.

147. The financial results are exhibited in the following table, as compared with those of the previous year :—

Year.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1883-84	6,94,334	3,87,813	3,06,521
1882-83	6,93,959	3,82,183	3,11,776
Increase or decrease in 1883-84 ...	375	5,630	—5,255

The falling off in the net Surplus, amounting to Rs. 5,255, is amply balanced by the increased value of timber and other forest produce in depôts at the close of the year, estimated to amount to Rs. 50,000 above the value at the commencement of the year.

The main portion of the Receipts and of the Surplus is derived from reserved forests, as may be gathered from the following table :—

Class of forests.	Receipts.	Surplus.	Area of forests.	Revenue per square mile.		
				Gross.	Net.	
					1883-84.	1882-83.
	Rs.	Rs.	Sq. miles.	Rs.	Rs.	Rs.
Reserved forests ...	5,53,433	2,14,600	4,635	119	46	58
Protected „ ...	39,355	10,804	2,300	17	5	3
District „ ...	1,01,546	81,117	4,325	23	19	11
Total ...	6,94,334	3,06,521	11,260	62	27	28

North-Western Provinces and Oudh.

148. It has been reported that during the year under review the following number of trees was felled, arranged according to the class of fellings :—

Circle.	Selection fellings.	Thinnings.	Clearances.	Total.
Central ...	58,580	397	7,765	66,742
Oudh	43,886	251,505	1,094,964	1,390,355
School	14,659	5,225	.....	19,884
Total in 1883-84 ...	117,125	257,127	1,102,729	1,476,981
„ 1882-83 ...	83,099	141,436	1,169,523	1,394,058

According to agency—

Circle.	By direct departmental agency.	By purchasers.	Under free grants.	Total
Central	20,202	31,201	12,339	66,742
Oudh	292,322	188,740	909,293	1,390,355
School	1,746	6,170	11,968	19,884
Total in 1883-84 ...	314,270	229,111	933,600	1,476,981
„ 1882-83 ...	183,540	344,566	865,952	1,394,058

Those felled by direct departmental agency are arranged according to species in the following table:—

Circle.	Sal.	Asna.	Sissu.	Deodar.	Other conifers.	Oak.	Miscellaneous.	Total.
Central	4,171	...	...	...	5,243	174	10,614	20,202
Oudh	44,160	4,352	...	...	...	...	243,810	292,322
School	95	...	7	432	726	406	80	1,746
Total ...	48,426	4,352	7	432	5,969	580	254,504	314,270

149. The fellings enumerated in the last paragraph are reported to have yielded the following material:—

Circle.	Yield, in cubic feet.				
	By departmental agency.	By purchasers.	By villagers (free grants).	Total.	Per acre of forest area.
Central	161,493	359,065	142,849	663,407	0·6
Oudh	1,788,652	476,601	487,153	2,752,409	3·8
School	218,656	143,190	1,280,732	1,642,578	3·3
Total in 1883-84 ...	2,168,801	978,859	1,910,734	5,058,394	2·2
„ 1882-83 ...	1,430,678	1,067,541	1,145,558	3,643,777	1·6
Increase or decrease in 1883-84	738,123	—88,682	765,176	1,414,617	0·6

The total yield of the year is nearly 1½ million cubic feet in excess of the outturn for the last two years. This is accounted for partly by increased

departmental fellings in the Kheri Forests in Oudh, where 30,000 additional sal trees were cut and converted into sleepers, and partly by a large increase in the number of free grants in the Jaunsar Division. The Government of India has noticed that the large number of sal trees felled in the Kheri Forests was above the prescribed outturn of the forests, and has suggested that an early enumeration of the growing stock should be made in the trans-Sarda Forests, in order to secure the forests against overcutting, on the one hand, and on the other to provide for their being worked to the full extent of their possibility. The extremely large increase in the number of free grants has also been commented upon by the Government of India.

Selection fellings are reported to have yielded 3,750,000 cubic feet as the outturn of 117,125 trees, thinnings 405,000 cubic feet from 257,127 trees felled, and clearances 903,000 cubic feet as the outturn of 1,102,729 trees.

In the School Circle selection fellings are reported to have yielded an average of 103 cubic feet per tree; in Oudh 38 cubic feet; and in the Central Circle only 10 cubic feet. This, making all allowance for the different species of trees felled, seems to prove that the term "selection felling" has not been interpreted in the different Circles in the same way.

150. The quantities of the principal items of forest produce, other than timber cut and collected by direct Government agency, is shown as below :—

Circle.	Firewood.	Charcoal.	Bamboos.
	Maunds.	Maunds.	No.
Central	96,708	1,019	909,481
Oudh	29,650	45	...
School	50,749	973	5,340
Total ...	177,107	2,037	914,821

151. The financial results of the year under review are shown in the following table :—

Circle.	Receipts.	Charges.	Surplus or deficit.	
			1883-84.	1882-83.
	Rs.	Rs.	Rs.	Rs.
Central	5,34,260	2,65,892	2,68,388	1,27,355
Oudh	8,05,538	4,89,215	3,16,323	95,723
School	2,71,565	2,86,778	—15,213	—48,700
Total in 1883-84 ...	16,11,383	10,41,885	5,69,498	...
„ 1882-83 ...	10,13,403	8,39,025	...	1,74,378
Increase in 1883-84 ...	5,97,980	2,02,860	3,95,120	...

The financial results show improvements in all three Circles, there being a total increase of six lakhs in the Receipts and of four lakhs in the Surplus.

This is so far satisfactory; but, in the absence of convincing proofs, based on careful enumeration, that the Oudh Forests can bear the present outturn, which is far above the provisions laid down for them, the present favourable financial results must soon sink again to their former level.

Punjab.

152. The quantity of produce removed from the forests under departmental control is reported as shown in the following table:—

Description of produce.	In 1882-83.	In 1883-84	Increase. In 1883-84	Decrease. In 1883-84
Trees and poles ... ... No.	80,212	67,038	...	13,174
Firewood ... C. ft. stacked	4,518,965*	6,263,686*	1,744,721	
Charcoal ... ... Mds.	9,759	4,550	...	5,209
Bamboos ... ... No.	787,759	699,381	...	88,378
Coal ... ... Tons.	354	317	...	37
Grass ... ... Mds.	94,182	81,146	...	13,036

* 1 maund has been taken as equal to 4 cubic feet stacked.
1 piece has been taken as equal to 2 maunds, or 8 cubic feet stacked.
1 load has been taken as equal to 1 maund, or 4 cubic feet stacked.

The produce was removed by the following agencies:

	Direct Government agency.	By purchasers.	Under free grants.	Total
Deodar ... Trees or poles.	5,023	316	1,266	6,605
Pine ... „	239	14,963	20,721	60,433
Other trees ... „	323		18,187	
Firewood ... Cub. ft.	...	6,263,686	...	6,263,686
Charcoal ... ... Mds.	...	4,550	...	4,550
Bamboos ... ... No.	687,439	11,942	...	699,381
Grass ... ... Mds.		81,146	...	81,146

The largest increase has taken place in the sale of firewood removed by purchasers, which, however, evidently includes material felled and stacked by Government agency, but sold in, and removed from, the forests by purchasers.

The number of trees given under free grants has largely decreased, but amounts still to above 46,000. This number, however, it is understood, consists to a large extent of poles and other thinnings for which no market could be found.

153. The imports of timber from Kashmir have increased during the year under review, as may be seen from the following abstract:—

	In 1882-83	In 1883-84.	Increase. in 1883-84.
Deodar ... ... Logs.	28,547	33,246	4,699
Pine ... ... Logs.	1,799	3,310	1,511
Sleepers ... ... No.	273,883	296,366	22,483

154. The financial results show a considerable increase both in Receipts and Surplus, as may be gathered from the following table :—

	In 1882-83.	In 1883-84.	Increase in 1883-84.
	Rs.	Rs.	Rs.
Receipts	7,66,709	9,10,177	1,43,468
Charges	5,60,750	6,53,146	92,396
Surplus	2,05,959	2,57,031	51,072

The charges include the payment of a solatium of Rs. 60,000 to the Maharajah of Kashmir, on account of loss of revenue said to have been sustained by him under the new drift timber arrangements now in force on the Jhelum, by which the British and Kashmir authorities have equal opportunities of salving drift tmber, although the Maharaja's forests on the higher parts of the Jhelum and its tributaries are much more extensive than those belonging to the British Government.

Central Provinces.

155. The following table shows the number of trees which are reported to have been felled by direct Government agency :—

	In 1882-83.	In 1883-84.	Increase in 1883-84.
Sal	330	547	217
Teak	1,555	10,363	8,808
Saj (trees)	9	171	162
„ (poles)	...	20,000	20,000
Other species	9,615	12,911	3,296
Total ...	11,509	43,992	32,483

The number of trees felled amounts to nearly four times that of the previous year.

156. The number of trees cut by purchasers and under free grants is not given in the Report of the year, but the following table exhibits the quantities removed from the forests by departmental agency and by purchasers, no record having been kept as regards free grants :—

Description of produce.	QUANTITY, ESTIMATED IN TONS.											
	By Departmental Agency.				By Purchasers.				Total.			
	Cubic feet.	Maunds.	Nos.	Reduced to tons.	Cubic feet.	Maunds.	Nos.	Reduced to tons.	Cubic feet.	Maunds.	Nos.	Reduced to tons.
Teak and sal wood ...	101,140	...	...	2,023	80,670	...	...	1,613	181,810	...	...	3,636
Other woods	51,017	...	...	1,020	2,051,223	...	...	41,024	2,102,240	...	...	42,044
Fencing wood	...	...	...	...	...	137,070	...	4,895	...	137,070	...	4,895
Firewood and charcoal ...	...	18,213	...	650	...	3,185,336	...	113,762	...	3,203,539	...	114,412
Bamboos and materials made of bamboos.	...	...	300,928	443	...	105,841	8,059,279	15,293	...	105,841	8,360,207	15,736
Grass pulas	...	...	1,016,643	242	...	...	65,363,437	15,560	...	...	66,370,080	15,802
Other minor produce	...	7,329	...	258	...	265,541	...	9,484	...	272,770	...	9,742
Total ...				4,636				201,631				206,267

It will be observed that all produce has been reduced to tons, and the following table will thus sufficiently illustrate how the outturn is divided between the different classes of reserves :—

Class of Forest.	QUANTITY, IN TONS.					
	Total.*			Per Square Mile.*		
	Timber, fuel, and bamboos.	Other produce.	Total.	Timber, fuel, and bamboos.	Other produce.	Total.
1st Class Reserves	25,503	7,887	33,390	10	3	13
2nd ditto	155,220	17,822	173,042	9	1	10
Total ...	180,723	25,709	206,432	9	1	10

* Calculated on the areas as they stood at the commencement of the year.

The statements, it is admitted, are as yet incomplete, but they are sufficiently correct to prove that the yield per square mile of 1st class reserves already exceeds that of those of the second class, and this will become more and more apparent with continuous protection.

157. The financial results were as follow :—

Class of Forest.	Receipts.	Charges.	Surplus.	
			Total.	Per square mile.
	Rs.	Rs.	Rs.	Rs.
1st Class Reserves	1,79,788	1,74,612*	5,176	2
2nd ditto	8,14,981	2,61,446*	5,53,535	33
Total in 1883-84 ...	9,94,769	4,36,058	5,58,711	29
Total in 1882-83 ...	9,77,647	4,12,247	5,65,400	29
Increase or decrease in 1883-84	17,122	23,811	- 6,689	...

* According to the data given in Form No. 57.

The financial results have somewhat fallen off for the last two years, and are in 1883-84, notwithstanding a slight increase in the Receipts, less favourable than in 1882-83.

It is explained that this is due to a greater outlay on demarcation and surveys of forest boundaries, higher rate of salaries, and a larger outlay on departmental works, the expected income from which had not all been collected within the financial year.

British Burma.

158. The number of trees girdled within the year is as follows :—

Circle.	Teak.			Other trees.
	Inside reserves.	Outside reserves.	Total.	
Pegu	6,700	9,605	16,305	2,868
Tenasserim	...	...	...	1,940
Total ...	6,700	9,605	16,305	4,808

The number of teak trees girdled in Pegu was 1,305 in excess of Mr. Brandis' forecast of 1881, and in Tenasserim 1,000 below. The excess in Pegu occurred entirely outside reserves, where the stock available in 1880 had been, as proved by experience, very much under-estimated.

159. The yield of the forests in timber is shown in the following table :—

	Timber extracted, in tons.		
	Teak.	Other timber.	Total.
By Government agency	34,404	5,537	39,941
By purchasers and under trade permits ...	2,507	66,048	68,555
Under free grants	337	572	909
By lease holders	3,200	1,252	4,452
Total in 1883-84 ...	40,448	73,409	1,13,857
„ 1882-83 ...	48,326	50,171	98,497
Increase or decrease in 1883-84	—7,878	23,238	15,360

As shown above, there has been a falling off in the outturn of teak, amounting to 7,878 tons, due chiefly to unfavourable floods. This decrease was, however, compensated by an increase of 23,238 tons of other timber. This timber, it is understood, sold freely, owing to the very high prices which were asked for teak.

160. The imports and exports of timber are given as follows :—

	Tons.
Imports ...	169,400 in Tenasserim and 47,835 logs in Pegu.
Exports ...	158,108 valued at Rs. 1,58,96,271.

Allowing only 40 cubic feet per log imported, it will be seen that the total amount of timber produced in British Burma or imported into it amounted to upwards of 300,000 tons, against an export of 158,000 tons.

Loss in conversion and local consumption are not sufficient to account for the large difference, and the surplus stock in the hands of traders at the end of the year must have been considerable.

161. The financial results of the year compare with those of the previous year as follows :—

Year.	Receipts.	Charges.	Surplus.	Proportion of Surplus to Receipts in per cent.
1883-84	25,09,275	12,17,824	12,91,451	51
1882-83	25,03,896	12,28,955	12,74,941	51

The results are very satisfactory, but the price of teak has fallen, and it cannot be expected that the same Surplus will be maintained during the next few years at least.

Assam.

162. The following table shows the outturn of the forests, excluding those of Sylhet and Cachar:—

Class of Forests.	Number of trees.			Total.		Poles, Basts, and Dead wood, in cubic feet.	Grand total, in cubic feet.
	Sal.	Other reserved trees.	Miscellaneous.	No.	Cubic contents.		
From Reserved forests	4,023	860	373	5,256	157,680	120,940	278,620
„ Protected and District forests ...	1,869	2,233	2,091	6,193	185,790	200,575	386,365
Total in 1883-84 ...	5,892	3,093	2,464	11,449	343,470	321,515	664,985
„ 1882-83 ...	12,002	2,426	3,225	17,653	...	...	...
Increase or decrease in 1883-84 ...	—6,110	667	—761	—6,204	...	...	...

The yield in sal has fallen off considerably, which is said to be due to the overstocked state of the Bengal market.

163. The yield of the Cachar and Sylhet forests is given as follows:—

Class of Forests.	Quantities removed, in cubic feet.			
	Logs.	Poles and planks.	Firewood.	Total.
From Government forests	221,425	92	6,828	228,345
„ Private „	408,729	1,167	11,648	421,544
„ Foreign „	39,445	...	228	39,673
Total ...	669,599	1,259	18,704	689,562

These data show a slight increase over the yield of 1882-83.

164. The imports of rubber from the Hill States into Assam are estimated at 1,642 maunds, while 10,244 maunds have been exported by steamer and boats. From these data it is estimated that 8,602 maunds were collected in Assam. No reliance can, however, be placed on the estimate of imports. The Rubber Mahals were sold for Rs. 36,700.

165. 7,470 trees, representing a value of Rs. 24,408, were made over free of charge to the Assam Railway and Trading Company, in accordance with the concession granted to them.

166. The financial results compare as follows with those of the previous year:—

Year.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1883-84	2,11,445	1,99,562	11,883
1882-83	2,48,605	1,71,823	76,782
Increase or decrease in 1883-84	—37,160	27,739	—64,899

The Receipts have fallen off, and the Charges increased, resulting in a considerably smaller Surplus. This result is due to the dull state of the timber market in Bengal, and to increased expenditure under live and dead stock, communications and buildings, demarcation and improvement of the forests, and under establishments.

Coorg.

167. The Report fails to give a summary of the total yield of the forests, a fact which has already been noticed by the Government of India. As far as the information can be extracted from the Report, it would seem, however, that the yield of the forests was as follows :—

Produce.	Government agency.	Purchasers	Sold on land given for coffee.	Free grants	Total.
Sandalwood	1,421	...	...	...	1,421
Teak	817	5	13	...	835
Other trees	969	90	1,019	146	2,224
Ballis and poles	...	1,189		84	1,573
Bamboos	24,115	62,992	...	3,780	92,187
Total ...	28,622	64,576	1,032	4,010	98,240

The number of trees felled departmentally during the last three years is as follows :—

	Teak	Other trees	Total.
1883-84	817	969	1,786
1882-83	494	1,186	1,680
1881-82	808	741	1,549

168. The sandalwood operations compared with those of the three previous years are as follows :—

Year.	Amount brought to depôt.	Sold during the year		
		Number of tons.	Amount realized	
	Tons.		Total.	Per ton.
			Rs.	Rs.
1880-81	118¼	112½	34,324	305
1881-82	126¾	60¾	14,059	231
1882-83	117½	192½	77,407	403
1883-84	74½	36½	10,908	301

The sandalwood operations seem to have suffered, owing to the illness and death of the contractor, but no explanation is given with regard to the falling off in the demand. An income of Rs. 21,705 has been obtained from the sale of cardamoms.

169. The financial results are shown in the following table, in comparison with those of the previous year:—

Year.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1883-84	87,822	75,023	12,799
1882-83	1,38,022	64,770	73,252
Increase or decrease in 1883-84	—50,200	10,253	—60,453

The Receipts are less by Rs. 50,200, caused by the already mentioned reduction in sandalwood sales, whereas the Expenditure shows an increase of Rs. 10,253, due to a larger outlay on plantations and timber work. The Surplus has consequently fallen from Rs. 73,252 to only Rs. 12,799.

Ajmere.

170. The financial results of the year, compared with those of [illegible]-83, show as follows:—

Year.	Receipts.	Charges.	Deficit.
	Rs.	Rs.	Rs.
1883-84	8,198	14,574	6,376
1882-83	7,126	11,284	4,158
Increase in 1883-84	1,072	3,290	2,218

The Receipts have again increased, but the Expenditure has at the same time risen by Rs. 3,290, and the Deficit is therefore larger by Rs. 2,218 than in the previous year. The rise in Expenditure is due to the appointment of an Assistant Conservator to the charge of the Ajmere Forests. The step was well considered, and the present increase of the Deficit is amply compensated by the greater care that is bestowed on the forests and their consequent future prospects.

Berar.

171 The financial results of the year under review, arranged according to the different classes of forests, are as follows :—

Class of Forests.	Receipts.	Charges.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
State Reserves	45,088	65,600	...	20,512
District „	13,205	25,024	...	11,819
District Forests	2,19,924	65,915	1,84,009	...
Total in 1883-84 ...	3,08,217	1,56,539	1,51,678	...
„ 1882-83 ...	2,92,014	1,55,054	1,36,960	...
Increase in 1883-84	16,203	1,485	14,718	...

The financial results show an improvement on those of the previous year, and the Deficit of the State and District Reserves has again decreased, as will be seen from the following figures :—

	Rs.
In 1881-82 it was	62,878
„ 1882-83 „	38,101
„ 1883-84 „	32,331

The greater portion of these reserves is at present closed, so as to effect their reproduction, and at the same time they are burdened with the cost of demarcation and surveys. In course of time no doubt the present Deficit will make way for a Surplus.

The revenue of the year was derived from the following sources :—

	Rs.	Rs.
By the sale of timber	87,260	
Do. do. firewood and charcoal	21,938	
From confiscated drift and waif wood	7,700	
By the sale of bamboos	31,964	
From miscellaneous sources	22,620	
		1,71,482
By the sale of grass and by grazing fees	1,36,735	
Total ...	3,08,217	

Biluchistan

172 The financial results of forest operations for the last four years show as follows :

Year.	Receipts.	Charges.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
1880-81	14,376	16,416	...	2,040
1881-82	18,616	17,682	934	...
1882-83	5,039	11,962	...	6,923
1883-84	4,752	16,911	...	12,159

Madras.

173. The financial results of the year, compared with those of the previous year, are as follows :—

Circle.	Receipts.	Charges.	Surplus.	Proportion of Surplus to Receipts, in per cent.
	Rs.	Rs.	Rs.	
Northern	4,06,692	3,20,882	85,810	21
Southern	5,47,012	4,65,851	81,161	15
Total in 1883-84 ...	9,53,704	7,86,733	1,66,971	18
„ 1882-83 ...	9,06,442	6,45,352	2,61,090	29
Increase or decrease in 1883-84 ...	47,262	1,41,381	—94,119	—11

Bombay.

174. The financial results of the year, compared with those of the previous year, are as follows :—

Circle.	Receipts	Charges.	Surplus.	Proportion of Surplus to Receipts, in per cent.
	Rs.	Rs.	Rs.	
Northern	9,58,316	5,71,601	3,86,715	40
Southern	9,07,291	4,99,003	4,03,288	45
Sind	6,42,493	4,93,568	1,48,925	23
Total in 1883-84 ...	25,03,100	15,64,172	9,38,928	38
„ 1882-83 ...	20,90,353	12,78,770	8,11,583	39
Increase or decrease in 1883-84 ...	4,12,747	2,85,402	1,27,345	—1

Exports of Forest produce.

175. The following table shows the quantities of forest produce exported from India during the year :—

Articles.	Quantity, in Tons of 20 cwt.; in the case of Teak, of 50 cubic feet.		Valuation at port of shipment in 1883-84.	
	Average of 5 years, 1878-79 to 1882-83.	In 1883-84.	Total.	Per ton.
			Rs.	Rs.
Caoutchouc	526	459	11,33,586	2,470
Shell-lac	3,612	4,664	48,16,875	1,033
Lac-dye	373	50	14,085	282
Sandalwood, ebony, and other ornamental woods ...	.....	(Not known)	2,69,209	(Not known)
Cutch and Gambier ...	12,055	15,115	35,32,000	234
Myrobalans	20,747	22,386	18,41,059	82
Teak	51,445	46,171	52,54,475	113
Total in 1883-84 ...	.....	.....	1,68,61,389	.....
„ 1882-83 ...	.....	.....	1,82,71,932	.....
Decrease in 1883-84 ...	.....	.....	14,10,543	.....

APPEN
STATE

Summary of the Revenue and Expenditure of the Forest

Budget Heads.	Bengal Presidency (British Territories).									
	Imperial.	Bengal.	North Western Provinces and Oudh.	Punjab.	Central Provinces.	British Burma.	Assam.	Coorg.	Ajmere.	Baluchistan.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
REVENUE.										
I.—Timber and other produce removed from the forests by Government agency.	...	1,55,345	9,04,132	4,35,670	80,336	19,67,530	1,775	49,579	107	3,526
II.—Timber and other produce removed from the forests by consumers or purchasers.	...	5,06,628	6,61,442	3,80,761	8,74,040	3,03,019	1,97,277	28,106	7,532	1,145
III.—Drift and waif wood and confiscated forest produce.	.	2,092	7,668	55,733	4,857	1,66,569	2,678	16	3	5
IV.—Revenue from forests not managed by Government.	...	498	11,881	22,455	11,822	40,219	7,380	.	...	53
V.—Miscellaneous ..	...	28,871	26,200	15,558	23,714	31,933	2,335	10,121	556	23
Total Revenue ..	32,907	6,94,334	16,11,388	9,10,177	9,94,769	25,09,270	2,11,445	87,822	8,198	4,752
EXPENDITURE.										
A. Conservancy and Works.										
I.—Timber and other produce removed from the forests by Government agency.	...	91,502	4,76,383	1,27,448	45,827	7,34,607	1,247	18,112	402	3,171
II.—Timber and other produce removed from the forests by consumers or purchasers.	...	24,804	34,543	2,171	1,63,976	7,415	6,751	...	77	
III.—Drift and waif wood and confiscated forest produce.	...	293	269	79,986	...	67,444	54	..	...	...
IV.—Revenue from forests not managed by Government.	...	.	1,128	11,188	...	...	.	...		
V.—Rent of leased forests, and payments to shareholders in forests managed by Government.		...	12,924	38,043	251		.		...	...
VI.—Live stock, stores, tools and plant.	...	13,469	38,966	3,574	7,740	44,099	14,354	1,752	323	31
VII.—Communications and buildings.	...	25,373	85,231	11,124	4,694	20,691	20,994	1,251	729	1,230
VIII.—Demarcation, improvement, and extension of forests.	...	34,060	68,672	76,874	30,791	58,958	43,110	22,557	2,467	729
IX.—Miscellaneous	.	6,404	10,598	4,609	3,973	6,497	4,172	1,362	102	...
Total Conservancy and Works.	...	1,95,905	7,28,715	3,51,717	2,57,252	9,39,711	90,642	45,037	4,100	5,161
B.—Establishments.										
I.—Salaries ..	...	1,01,837	2,63,612	2,47,120	1,52,250	2,31,643	89,584	25,974	8,874	9,042
II —Travelling allowances...	...	21,395	34,549	38,553	15,309	34,362	15,342	3,199	1,170	2,574
III.—Contingencies .	...	8,676	15,009	15,756	11,247	12,108	3,994	813	430	134
Total Establishments ...	...	1,31,908	3,13,170	3,01,429	1,78,806	2,78,113	1,08,920	29,986	10,474	11,750
Grand Total of Expenditure.	98,266	3,87,813	10,41,885	6,53,146	4,36,058	12,17,824	1,99,562	75,023	14,574	16,911
SURPLUS ...	...	3,06,521	5,69,498	2,57,031	5,58,711	12,91,451	11,883	12,799	...	...
DEFICIT ...	65,359	...	...	..	...	...	...	...	6,376	12,159

* The figures in this Statement have been revised by the Comptroller and Auditor General.

DICES.

MENT I.

Department in India for the year 1883-84.

Forest Surveys.	Total Bengal Presidency (British Territories).	Madras.	Bombay.	Total British Provinces.	Berar.	Grand Total.	Budget Heads.
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
							REVENUE.
...	35,98,000	3,18,766	15,68,449	54,85,215	...	54,85,215	I.—Timber and other produce removed from the forests by Government agency.
...	29,59,950	6,00,730	8,25,100	43,85,780	2,96,899	46,82,679	II.—Timber and other produce removed from the forests by consumers or purchasers.
...	2,40,521	14,382	21,947	2,76,850	7,700	2,84,550	III.—Drift and waif wood and confiscated forest produce.
...	94,308	...	35,208	1,29,516	...	1,29,516	IV.—Revenue from forests not managed by Government.
36	1,39,412	19,926	52,396	2,11,634	3,618	2,15,252	V.—Miscellaneous.
36	70,65,098†	9,53,704	25,03,100	1,05,21,902	3,08,217	1,08,30,119	Total Revenue.
							EXPENDITURE.
							A.—Conservancy and Works.
...	14,98,699	90,352	6,75,378	22,64,429	...	22,64,429	I.—Timber and other produce removed from the forests by Government agency.
...	2,39,737	25,364	38,824	3,03,925	878	3,04,803	II.—Timber and other produce removed from the forests by consumers or purchasers.
...	1,47,146	1,576	306	1,49,028	...	1,49,028	III.—Drift and waif wood and confiscated forest produce.
...	12,316	...	5,275	17,591	...	17,591	IV.—Revenue from forests not managed by Government.
...	51,219	19,129	20,574	90,922	17,120	1,08,042	V.—Rent of leased forests and payments to shareholders in forests managed by Government.
2,188	1,26,496	7,060	5,001	1,38,647	3,331	1,41,978	VI.—Live stock, stores, tools and plant.
...	1,74,920	23,765	36,003	2,36,688	10,078	2,46,766	VII.—Communications and buildings.
5,264	3,37,482	1,76,673	3,12,711	8,26,866	16,147	8,43,013	VIII.—Demarcation, improvement, and extension of forests.
...	37,077	5,701	5,398	48,776	4,755	53,531	IX.—Miscellaneous.
7,452	26,25,692	3,51,020	10,99,560	40,76,872	52,309	41,29,181	Total Conservancy and Works.
							B.—Establishments.
19,399	12,09,335	3,43,074	3,43,931	18,96,340	80,571	19,76,911	I.—Salaries.
3,040	1,69,493	70,478	92,442	3,32,413	7,696	3,40,109	II.—Travelling allowances.
1,049	69,216	21,561	28,230	1,19,016	15,963	1,34,979	III.—Contingencies.
23,488	14,48,044	4,35,113	4,64,612	23,47,769	1,04,230	24,51,999	Total Establishments.
30,940	41,72,002†	7,86,733	15,64,172	65,22,907	1,56,539	66,79,446	Grand Total of Expenditure.
...	28,93,096	1,66,971	9,38,928	39,98,995	1,51,678	41,50,673	SURPLUS.
30,904	...	...	...	...	...	...	DEFICIT.

† Those totals include, respectively, Revenue and Expenditure under "Imperial," which cannot satisfactorily be allotted to any particular budget sub-head.

STATEMENT II.*

Financial Results of Forest Administration for the year 1883-84.

Province.	Timber and other produce removed from the Forests by Government Agency.			Other Revenue.			Formation, Protection and Improvement of Forests.
	Receipts.	Charges.	Surplus or Deficit.	Receipts.	Charges.	Surplus or Deficit.	Charges.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	1,56,595	1,30,207	26,388	5,37,739	1,20,644	4,17,095	1,36,962
North-Western Provinces and Oudh.	9,04,716	6,15,617	2,89,099	7,06,667	1,63,591	5,43,076	2,62,676
Punjab	4,91,404	3,46,841	1,44,563	4,18,773	1,19,337	2,99,436	1,86,968
Central Provinces ...	80,334	59,130	21,204	9,14,435	2,33,415	6,81,020	1,43,512
British Burma ...	20,64,168	9,08,645	11,55,523	4,45,107	1,46,619	2,98,488	1,62,559
Assam	4,453	1,302	3,151	2,06,992	68,031	1,38,061	1,29,329
Coorg	49,579	29,746	19,833	38,243	6,516	31,727	38,761
Ajmere	106	402	—296	8,092	3,850	4,242	10,322
Biluchistan	3,526	9,472	—5,946	1,226	3,348	—2,122	4,091
Forest Surveys ...	...	...	...	36	...	36	30,940
Total ...	37,54,881	21,01,362	16,53,519	32,77,310	8,66,251	24,11,059	11,06,120
Berar	...		...	3,08,217	1,03,424	2,04,793	53,115
Total Bengal Presidency ...	37,54,881	21,01,362	16,53,519	35,85,527	9,69,675	26,15,852	11,59,235
Madras			Data not available.				
Bombay			Data not available.				

* The figures in this Statement are taken from Form No. 57 appended to the Annual Forest Reports.

STATEMENT III.*

Revenue, Expenditure, and Surplus of the Forest Department throughout India during the twenty years from 1864-65 to 1883-84.

REVENUE.

Provinces.	1864-65.	1865-66.	1866-67.	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Imperial†	421	30,959	752	543	1,159	1,436	3,107	2,334	2,771	1,225	1,144	1,465	2,490	1,36,773	16,716	17,214	18,887	27,407	30,732	32,907
Bengal	19,760	38,658	45,590	56,039	70,715	2,44,657	1,03,249	1,44,719	1,49,852	1,79,306	1,85,932	1,98,274	2,22,401	4,26,228	4,16,027	4,49,524	5,61,340	6,33,734	6,93,959	6,94,334
North-Western Provinces and Oudh ...	7,23,440	7,31,382	7,79,201	5,84,503	7,85,210	8,32,945	4,24,257	11,70,900	19,39,115	19,32,677	13,63,358	12,64,356	11,50,671	12,03,108	11,26,755	10,39,966	9,42,228	10,66,094	10,12,403	16,11,383
Punjab	5,27,081	3,50,680	3,96,050	3,80,510	3,44,882	3,94,129	2,47,236	7,10,216	6,52,995	7,32,539	8,34,874	9,09,831	5,98,754	6,83,711	5,00,619	6,49,819	6,71,678	6,88,308	7,66,709	9,10,177
Central Provinces	68,760	1,34,042	2,37,472	3,49,490	3,50,536	4,16,020	6,53,120	5,57,128	4,81,673	5,68,367	6,60,938	7,26,176	6,61,326	6,83,910	8,52,862	10,06,724	8,50,139	11,72,884	9,77,647	9,94,769
British Burma	9,34,070	8,93,485	4,24,774	6,46,812	8,17,599	9,84,774	8,18,124	7,72,400	8,27,569	10,69,621	10,74,802	17,79,020	15,51,408	16,03,082	11,37,562	11,80,190	15,16,613	22,31,804	25,03,896	25,09,275
Assam	...	...	...	...	...	...	...	...	...	...	65,949	61,870	81,568	1,34,326	1,61,779	1,64,335	1,68,997	1,66,054	2,48,605	2,11,445
Coorg	57,488	1,01,157	32,508	79,082	98,496	1,08,135	72,144	92,466	84,225	1,10,284	58,015	1,07,460	75,927	1,01,014	52,020	1,01,786	87,857	1,00,364	1,38,022	87,822
Ajmere	...	...	...	...	...	...	...	...	24	304	202	410	905	3,002	1,241	1,861	1,124	4,065	7,126	8,198
Forest Surveys	...	...	...	...	...	...	...	...	...	...	...	21	...	...	63	38	272	...	348	36
Total ...	23,31,020	22,85,363	19,16,347	19,96,979	24,68,597	29,82,096	30,26,237	34,50,163	41,38,424	45,93,383	42,45,214	50,48,883	43,45,450	49,75,154	42,65,644	46,11,457	48,19,135	60,90,714	63,80,447	70,60,346
Madras	4,49,770	4,76,674	4,48,119	5,81,342	5,29,185	6,97,699	5,33,412	5,76,261	5,95,188	6,13,653	5,14,401	6,77,873	5,92,573	5,50,310	6,06,788	6,26,168	7,36,880	8,06,908	9,06,442	9,53,704
Bombay	10,81,907	10,07,611	8,21,269	8,84,244	12,13,483	12,35,257	11,08,401	11,50,215	11,46,405	11,88,089	12,24,051	12,48,672	12,26,658	12,61,528	11,81,894	15,24,712	15,22,807	18,28,117	20,90,353	25,53,109
Total (British India) ...	38,62,697	37,69,648	31,85,725	34,62,565	42,11,265	49,15,052	47,28,050	51,76,639	58,80,017	63,95,125	59,83,666	69,75,428	61,64,681	67,86,992	60,54,326	67,62,337	70,78,822	87,25,739	93,77,242	1,05,17,159
Berar	2,368	15,100	43,574	53,440	84,557	1,80,397	1,77,329	1,53,543	2,56,861	2,63,256	2,60,674	2,32,763	2,53,072	2,79,236	2,88,704	3,07,500	2,06,736	2,23,511	2,92,014	3,08,217
Biluchistan	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	14,376	18,616	5,039	4,752
GRAND TOTAL ...	38,65,065	37,84,754	32,29,299	35,16,005	42,95,822	50,95,449	49,05,379	53,32,182	61,36,880	66,58,381	62,44,340	72,08,210	64,17,753	70,66,228	63,43,030	70,69,837	73,99,954	89,77,866	96,74,295	1,08,30,119

* The figures in this Statement have been revised by the Comptroller and Auditor General.
† Includes certain Home Receipts, and undistributable and petty local items.

STATEMENT III—*continued.*

EXPENDITURE.

Provinces.	1864-65.	1865-66.	1866-67.	1867-68.	1868-69.	1869-70.	1870-71.	1871-72	1872-73	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81	1881-82.	1882-83.	1883-84.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Imperial*	44,207	16,981	32,078	38,924	33,007	54,106	51,423	66,530	67,150	79,216	81,210	48,239	44,004	98,099	63,956	73,910	65,291	77,635	87,288	98,266
Bengal	3,971	45,292	1,05,215	1,67,405	1,15,933	1,17,899	86,479	1,10,959	1,00,777	1,39,274	1,01,361	1,42,676	2,14,497	2,62,013	3,38,675	2,75,746	3,35,481	3,94,612	3,82,183	3,67,613
North-Western Provinces and Oudh ...	5,03,580	3,31,261	4,10,205	3,99,806	5,01,021	5,29,422	9,10,073	11,10,071	11,74,668	11,90,794	10,61,302	7,36,979	8,61,362	7,28,926	8,09,977	7,16,594	6,79,574	9,19,212	8,39,025	10,41,885
Punjab	5,78,616	2,71,369	2,63,373	2,98,029	3,17,634	7,41,432	11,95,655	7,07,619	8,90,369	6,11,556	6,58,633	5,56,911	5,25,659	5,20,631	5,23,551	4,89,676	4,95,368	5,16,269	5,60,750	6,53,146
Central Provinces	1,55,270	1,08,597	1,49,408	2,18,434	3,19,126	4,74,930	3,17,928	2,31,633	2,50,578	2,85,939	2,94,449	3,73,327	2,90,295	3,22,034	3,93,758	5,22,574	4,95,512	4,97,013	4,13,247	4,36,059
British Burma	2,62,930	3,11,941	2,86,993	3,30,536	4,24,333	4,22,106	4,00,851	3,79,217	3,96,739	4,75,304	6,63,547	8,15,659	10,05,554	9,58,231	7,18,402	7,53,490	7,12,508	11,50,224	12,28,055	12,17,834
Assam	...	...	...	...	...	...	...	...	...	...	60,367	63,397	90,520	1,01,153	1,26,028	1,32,820	1,42,725	1,65,361	1,71,928	1,99,502
Coorg	3,407	12,996	6,650	13,722	17,848	53,064	24,747	70,178	29,479	45,052	37,909	40,168	33,692	36,268	34,929	55,165	56,487	59,796	64,770	75,023
Ajmere	...	...	...	...	...	...	...	...	13,054	17,992	15,281	27,346	22,460	14,926	13,445	13,750	12,423	13,954	11,234	14,574
Forest Surveys	...	...	...	...	...	...	...	...	...	59,556	76,090	58,930	59,929	60,165	60,325	46,878	40,335	42,499	41,595	30,940
Total ...	15,51,981	10,98,437	12,53,922	14,46,936	17,28,902	23,72,959	28,87,156	26,76,237	28,62,532	29,05,523	30,52,589	28,63,632	31,46,972	30,09,346	30,82,949	30,71,514	30,35,664	39,33,565	37,99,900	41,55,091
Madras	2,64,780	3,51,382	3,42,827	4,02,674	4,01,617	4,21,316	4,47,267	3,91,921	5,48,746	4,74,920	5,05,941	5,02,039	6,35,560	5,65,621	4,95,914	5,48,527	5,19,270	6,03,419	6,45,352	7,86,733
Bombay	3,72,187	7,77,139	6,51,641	5,55,039	6,31,228	5,56,015	6,39,759	5,97,831	7,25,031	7,21,594	8,36,675	7,64,141	8563,979	8,77,716	10,04,923	10,76,989	11,67,347	11,69,181	12,78,770	15,64,173
Total (British India) ...	21,88,948	22,26,958	22,50,390	24,04,649	27,61,745	33,50,290	39,74,182	36,65,989	41,36,609	41,02,037	44,85,205	42,40,812	46,21,511	44,46,686	45,83,786	46,97,030	47,22,281	56,06,165	57,24,022	65,05,959
Berar	478	8,991	13,718	18,669	34,105	81,569	81,972	1,00,829	83,631	86,350	91,399	91,499	94,652	1,09,968	1,07,350	1,10,506	1,28,968	1,52,965	1,55,054	1,56,539
Biluchistan	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	16,416	17,682	11,962	16,911
GRAND TOTAL ...	21,89,426	22,35,959	22,64,108	24,23,318	27,95,850	34,31,859	40,56,154	37,66,818	42,20,240	41,88,387	45,76,594	43,41,311	47,16,163	45,56,654	46,91,136	48,07,536	48,67,665	57,76,632	58,91,038	66,79,449

* Includes pay of Inspector General of Forests, certain Home Charges, and undistributable and petty local items.

STATEMENT III—*concluded.*

SURPLUS.

Provinces.	1864-65.	1865-66.	1866-67.	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Imperial*	—43,786	13,978	—31,326	—38,381	—31,848	—52,670	—48,316	—64,196	—64,379	—77,991	—80,066	—46,774	—42,514	38,674	—47,240	—56,506	—46,404	—50,228	—66,536	—65,359
Bengal	15,789	—6,634	—59,625	—1,11,456	—45,218	1,26,758	16,770	33,730	49,075	40,092	84,571	55,508	7,904	1,63,315	77,352	1,73,776	2,25,959	2,39,122	3,11,776	3,06,521
North-Western Provinces and Oudh ...	2,19,860	4,00,121	3,68,996	1,94,697	2,84,189	3,03,523	—3,85,816	60,829	7,64,449	7,41,883	3,02,056	5,27,377	3,89,369	4,74,182	3,16,778	3,23,372	2,62,654	1,49,882	1,74,378	5,69,498
Punjab	—51,535	79,311	1,32,677	—7,519	27,248	—3,47,903	—2,48,419	2,597	—2,37,374	1,20,983	1,75,891	3,52,920	73,095	1,63,080	—22,935	1,69,143	1,76,310	1,72,039	2,05,959	2,57,031
Central Provinces	—86,510	25,445	88,064	1,31,056	31,410	—88,910	3,40,102	3,25,495	2,31,095	2,82,423	3,66,489	3,52,849	3,71,631	3,61,876	4,59,104	4,84,150	3,54,627	6,75,871	5,65,490	5,58,711
British Burma	6,71,140	5,86,544	1,37,781	3,16,286	3,93,286	5,62,668	4,17,273	3,53,183	4,90,810	5,93,317	4,11,255	9,63,381	5,45,854	7,44,851	4,19,160	4,26,760	8,04,045	10,81,580	12,74,941	12,91,451
Assam	...	...	...	...	...	...	...	...	...	...	6,582	—1,527	—8,952	33,173	35,751	31,506	26,272	693	78,782	11,883
Coorg	54,081	88,161	23,858	65,360	80,648	75,071	47,397	22,288	54,946	64,332	20,016	67,292	42,235	64,746	17,191	46,621	31,370	40,568	73,252	12,799
Ajmere	...	...	...	...	...	...	...	...	—13,030	—17,628	—15,079	—26,936	—21,555	—11,924	—12,204	—11,880	—11,290	—9,889	—4,158	—6,370
Forest Surveys*	...	...	...	...	...	...	...	...	...	—59,556	—78,090	—58,909	—58,929	—60,165	—60,262	—46,840	—40,063	—42,489	—41,247	—39,304
Total ...	7,79,939	11,86,926	6,60,425	5,50,043	7,39,695	6,09,137	1,39,081	7,73,926	12,75,592	16,87,860	11,92,625	21,85,251	11,98,478	19,71,808	11,82,695	15,39,943	17,83,471	22,57,149	25,89,547	29,06,255
Madras	1,84,990	1,25,282	1,05,283	1,78,668	1,27,568	2,76,383	86,145	1,84,340	46,442	1,38,733	—81,540	85,834	—42,987	—15,214	1,10,874	77,641	2,17,610	2,03,489	2,61,090	1,66,971
Bombay	7,09,720	2,30,473	1,60,627	3,29,205	5,82,257	6,79,242	5,28,642	5,52,384	4,21,374	4,66,495	3,87,376	4,54,531	3,87,679	3,83,812	1,76,971	4,47,723	3,55,469	6,58,936	8,11,583	9,38,928
Total (British India) ...	16,73,749	15,42,680	9,25,335	10,57,916	14,49,520	15,64,762	7,53,868	15,10,650	17,43,408	22,93,088	14,98,461	27,25,616	15,43,170	23,40,306	14,70,540	20,65,307	23,56,541	31,19,574	36,53,220	40,11,154
Berar	1,890	6,115	29,856	34,771	50,452	98,828	95,357	51,714	1,72,932	1,76,906	1,89,285	1,41,283	1,58,420	1,09,268	1,81,354	1,96,994	1,37,588	80,526	1,36,960	1,51,678
Biluchistan	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	—2,040	934	—6,923	—12,182
GRAND TOTAL ...	16,75,639	15,48,795	9,55,191	10,92,687	14,99,972	16,63,590	8,49,225	15,62,364	19,16,340	24,69,994	16,87,746	28,66,899	17,01,590	25,09,574	16,51,894	22,62,301	24,92,089	32,01,034	37,83,257	41,50,650

* Includes pay of Inspector General of Forests, certain Home Charges, and undistributable and petty local items.

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REVIEW

OF

FOREST ADMINISTRATION

IN

BRITISH INDIA

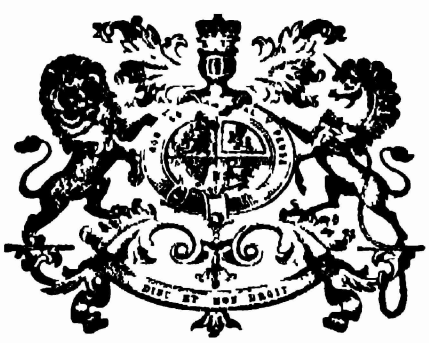
FOR THE YEAR

1884-85.

BY

B. RIBBENTROP,

OFFICIATING INSPECTOR GENERAL OF FORESTS TO THE GOVERNMENT OF INDIA.



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CHAPTER I.

Area and Boundaries.

AREA.

General.

The following table exhibits the Forest Areas, the property of Government, which were partially or entirely under the management and control of the Forest Department on the 1st April 1885 :—

Province.	Forest area, in square miles.					Percentage of Forests to whole area of Province.	Remarks.
Name.	Area, in square miles.	Reserved Forests.	Protected Forests.	District Forests.	Total.		
Bengal	150,589	4,882	2,298	4,313	11,493	7·63	
North-Western Provinces and Oudh.	106,080	3,390	·99	118	3,607	3·40	
Punjab	106,772	1,015	311	2,908	4,234	3·96	
Central Provinces ...	84,445	*19,440	...	404	19,844	23·50	* 3,506 square miles are 1st class Reserves; the rest 2nd class.
British Burma	87,220	†3,942	...	...	3,942	4·52	† 414 square miles are *taungya* areas.
Assam	45,838	2,342	863	6,390	9,595	20·93	
Coorg	1,583	238	...	...	238	15·03	
Ajmere	2,711	144	...	...	144	5·31	
Baluchistan	...	...	...	8	8	...	
Total ...	585,238	35,393	3,571	14,141	53,105	9·07	
Berar	17,711	1,544	...	2,820	4,364	24·64	
Total Bengal Presidency	602,949	36,937	3,571	16,961	57,469	9·53	
Madras	141,028	2,980	‡4,884	1,156	9,020	6·40	‡ "Reserved Lands."
Bombay	124,300	9,297	4,648	...	13,945	11·22	
Grand Total ...	868,277	49,214	13,103	18,117	80,434	9·26	

2. The area of Reserved Forests includes in several provinces forests declared to be reserved under section 34 of the Indian Forest Act; and in these the rights of private persons have still to be settled in all such cases where they have not, previous to such declaration, been enquired into, settled, and recorded in a manner considered to be sufficient by the Local Government, or have subsequently been settled under the provisions of Chapter II of the Forest Act. Settlements of such Reserves are in progress in several provinces. It is hoped that in the next Review it will be possible to distinguish between Reserves finally settled and those in which a settlement of rights has still to take place.

It is gradually becoming better understood that the position of a Forest Settlement Officer is simply that of a Court standing impartially between the proprietor and the right-holder to define the legal status of a forest property, and who in that respect is as independent of the executive as any other Civil Court. It still frequently happens, however, that Forest Settlement Officers make administrative settlements, instead of confining themselves to their legal duties;

and it also sometimes occurs that they are in this respect guided by instructions from authorities who would not interfere with other Civil Courts. The Government of India has had occasion, during the past year, to point out, in regard to several cases which were brought to notice, that Forest Settlements should be carried out more strictly in accordance with the provisions of the Forest Act.

3. The Reserved Forests, which form a little more than $5\frac{1}{3}$ per cent. of the total area of British India, are distributed among the several provinces in the following proportions of their total areas :—

Province.	Percentage of Reserved Forest area.
Bengal	3·24
North-Western Provinces and Oudh	3·19
Punjab	0·95
Central Provinces	23·02
British Burma	4·52
Assam	5·11
Coorg	15·03
Ajmere	5·31
Baluchistan	...
Berar	8·72
Madras	2·11
Bombay	7·48

4. The following increase has taken place in the reservation of forest areas during 1884-85 :—

	Square miles.
Reserves	449
Protected Forests	4,518
Total ...	4,967

The changes that have taken place during the year are distributed amongst the several provinces in the following manner :—

PROVINCE.	AREA, IN SQUARE MILES.					
	Reserved Forests.		Protected Forests.		Total.	
	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.
Bengal	247	...	...	2	245	...
North-Western Provinces and Oudh ..	59	...	...	...	59	...
Punjab	...	7	...	...	...	7
Central Provinces	11	...	...	...	11	...
British Burma	183	...	...	...	183	...
Assam	28	...	...	...	28	...
Coorg	5	...	...	...	5	...
Ajmere	5	...	...	...	5	...
Total ...	531	...	...	2	529	...
Berar	...	91	...	...	...	91
Total Bengal Presidency ...	440	...	...	2	438	...
Madras	110	...	4,884	...	4,994	...
Bombay	...	101	...	364	...	465
Grand Total ...	449	...	4,518	...	4,967	...

5. In addition to the Government Forests enumerated in the foregoing paragraphs, the Forest Department is in charge of a considerable area of Leased Forests, in which up to the end of the year the following Reserves, constituted similarly to Reserves under the Indian Forest Act, have been formed :—

Province.	From whom Leased.	Area, in square miles.	Remarks.
North-Western Provinces and Oudh.	Tehri-Garhwal Jaghirs	9	The area reserved on the Bhagirathi in the Central Circle is not given in the North-Western Provinces and Oudh Report.
	Raja of Tehri-Garhwal	28	
	Raja of Bashahr	2	
Punjab	Raja of Bashahr	180	
	Raja of Chamba	196	
Total Bengal Presidency	....	415	
Madras	Raja of Sandur	62	
	Raja of Nilambur	200	
Grand Total ...	....	677	

6. The cost of demarcation and maintenance of old boundary lines during the year was :—

	Rs.
In the Bengal Presidency	51,581
„ Madras „	23,063
„ Bombay „	6,103
Total ...	80,747

And for compensation for rights commuted and for the acquisition of land there were paid :—

	Rs.
In the Bengal Presidency	68,013
„ Madras „	11,356
„ Bombay „	40,176
Total ...	1,19,545

Bengal.

7. The changes in the areas under the management of the Forest Department during the year under review were as follow :—

Class of Forests.	Area, in square miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved Forests	4,635	264	17	4,882
Protected „	2,300	...	2	2,298
District „	4,325	...	12	4,313
Total ...	11,260	264	31	11,493

The principal increase is in the Singhbhum sub-division of Chota Nagpore. Much remains still to be done in the matter of the acquisition of Government Forests in Bengal, and enquiries are being instituted to ascertain the area of private forests, and also that of Government waste land suitable for the formation of Fuel and Fodder Reserves.

The proportion of Reserved Forests in the whole of Bengal is still only 3¼ per cent. of the whole area of the country, and the great bulk of the forests lies in comparatively remote parts of the province. It is true that the climate of Bengal may not necessitate such a large direct and indirect consumption of timber as in other provinces; still the country is thickly populated, and very large areas are absolutely without forests under Government control.

North-Western Provinces and Oudh.

8. The changes in the areas of the various classes of forests are :—

Class of Forests.	Area, in square miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved Forests	3,380	85	*36	†3,429
Protected „	99	...	...	99
District „	118	...	...	118
Total ...	3,597	85	36	†3,646

* Of this, 4 square miles are due to corrections of clerical errors. | † Includes 39 square miles of Leased Forests.

The area of these forests is still less than 3½ per cent. of the area of the province. An exhaustive enquiry into the question of Fuel and Fodder Reserves has led the Lieutenant-Governor to the opinion that the acquisition of fresh lands for fodder purposes would be difficult and expensive. Fodder is only an accessory, not a main produce of forests; but there is no doubt that the Forest Reserves will, under a conservative treatment, yield very large quantities of grass. It is satisfactory to know that 17 square miles of grass lands in Oudh, which it was at one time proposed to reclaim for cultivation, have been made into Grazing Reserves, and placed under the management of the District Officers.

Punjab.

9. The changes made during the year are exhibited as follows :—

Class of Forests.	Area, in square miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved Forests	1,022	...	7	1,015
Protected „	311	...	...	311
District „	2,910	...	2	2,908
Total	4,243	...	9	4,234

Although no increase in the area of the forests under the control of the Forest Department has taken place during the year, progress is nevertheless being made in the Rawalpindi and Kulu Districts, where fresh areas are shortly to be made Reserves. In the same districts, as well as in Kangra and Gujranwala, large areas are being selected, demarcated, and examined with the view of being made Protected Forests.

10. Central Provinces.

Class of Forests.	Area, in square miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved Forests, 1st class	3,435	70	...	3,505
Reserved „ 2nd class	15,994	...	59	15,935
District „	319	85	...	404
Total	19,748	155	59	19,844

The process of transferring areas from 1st to 2nd class management has been continued, the valuable Bhandak Forest having now come under closer forest conservancy. The total area of the 1st class Reserves is, however, still only 4·15 per cent. of the area of the province.

These Reserves, both 1st and 2nd class, have, with a few unimportant exceptions which were constituted under Chapter II, been declared by the Local Government to be reserved under Section 34 of the Forest Act, and it is understood that no further enquiry into any rights in them is needed.

11. **British Burma.**

Class of Forests.	Area, in square miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved Forests	3,759	210	27	3,942
Protected „	...	...	...	...
District „	...	...	...	...
Total	3,759	210	27	3,942

The proportion of Reserved Forests to the area of the province is still only 4½ per cent.; but 800 square miles in Tenasserim and 125 in Pegu are being examined with a view to being formed into Reserves.

Assam.

12. The changes in the constitution of State Forest property were as follow:—

Class of Forests.	Area, in square miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved Forests	2,314	29	1	2,342
Protected „	863	...	...	863
District „	6,422	...	32	6,390
Total	9,599	29	33	9,595

There are proposed increases to the reserved area of 4 square miles in Kamrup and 243 square miles in Lakhimpur.

Coorg.

13. The reserved area was increased by 5 square miles.

The question of a Forest Law for Coorg, after having been long pending, has almost been brought to a solution. The introduction of such a measure will enable the settlement of the Ghat Forests to be undertaken, as well as that of the old Reserves, which seem to require resettlement.

Finality in the settlements will also assist the operations of the working-plans, for which a commencement has been made.

Ajmere.

14. The area of Reserves has been increased by 5 square miles, the total now comprising 144 square miles. As it is not likely that the area of this class of forest property can increase, and as the total area of 144 square miles cannot suffice for the requirements of the country, it is satisfactory to see that some 52 square miles of forests are about to be made into Village Forests.

Demarcation has made satisfactory progress, the recording of rights is nearly completed, and a commencement has been made in mapping the forests.

Berar.

15. The changes in the constitution of the Berar Forests during the year under review are thus shown:—

Class of Forests.	Area, in square miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved Forests	1,635	20	111	1,544
Protected „	...	...	...	...
District „	2,760	99	39	2,820
Total	4,395	119	150	4,364

The changes are mostly due to reclassification. The survey of the Melghat and South Berar Forests has again made good progress, the total area surveyed being now 375 square miles, of which 207 square miles are on a 2-inch and 168 square miles on a 4-inch scale.

Madras.

16. The Forests under the control of the Forest Department in the Madras Presidency are still in a transition stage as regards their classification and nomenclature. The classification is, as far as it has hitherto gone—

	Square miles.
Reserved Forests	1,121
Forests treated as Reserves under old rules	1,859
Leased Forests	262
Reserved Lands	4,884
Other Forests	1,156
Total ...	9,282

The old Reserves, the Reserved Lands, and the "Other Forests" will all gradually pass through the Forest Settlement Officer's hands. They will all ultimately become either Reserved Forests or District Forests, there being no Protected Forests in Madras.

Bombay.

17.

Class of Forests.	Area, in square miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved Forests	9,398	367	468	9,297
Protected „	5,012	180	544	4,648
District „	...	...	...	...
Total	14,410	547	1,012	13,945

These reductions are mainly due to the disafforestment going on as a result of the Forest Settlement Officer's operations, and they will continue until the Forest Settlement is completed. This was understood from the beginning, the Bombay Forests having been mostly gazetted under Section 34 (Chapter V) of the Forest Act, when some 15,000 square miles were placed under management, partly as Reserves, partly as Protected Forests. What has been going on since is—

(1) The final settlement of both Reserved and Protected Forests.

(2) Alienation of parts of these areas due to the Forest Settlement Officer's proceedings.

(3) Transfer of parts of the Protected Forest area to "Reserved Forests."

BOUNDARIES.

Bengal.

18. With regard to boundaries, information was sought in the following form, but could not be completely obtained in time :—

I.—Boundaries cleared and demarcated...	(*a*) Mileage chargeable to A-VIII (*a*) (Demarcation). (*b*) Mileage chargeable to A-VIII (*c*) (Fire-protection). (*c*) Number of posts or pillars.
II.—Natural boundaries uncleared, but along which posts or pillars are erected.	(*a*) Length in miles. (*b*) Number of posts or pillars.
III.—Natural boundaries, along which posts, &c., are *not* erected.	Length in miles.
Total for each forest ...	(*a*) Length of all boundaries in miles. (*b*) Number of posts or pillars.

In the meanwhile both new demarcation and the maintenance of old boundaries and boundary marks continue satisfactorily.

The above form might with advantage be used in all provinces, with perhaps the addition under I of mileage chargeable to A-VII (*a*) (Roads).

North-Western Provinces and Oudh.

19. In the Central Circle the demarcation is complete in all but the Ganges Division, and maintenance is satisfactory. In the Oudh Circle demarcation is understood to be complete, but more detailed and frequent inspection is required. In the School Circle the maintenance of the boundaries and marks is not so satisfactory, especially in the hill forests.

Punjab.

20. In the Punjab fair progress has been made in the work of demarcating boundaries.

Central Provinces.

21. In the Central Provinces 2,159 miles, out of 2,522 miles, of boundary in the 1st class Reserves are reported as cleared. The important work of checking the boundaries of the 2nd class Reserves has been carried on in twelve Districts, and the results are reported to be satisfactory; but it is not yet known how much still remains to be done.

British Burma.

22. In both Circles demarcation, maintenance, and inspection received attention. In the Rangoon Division the boundaries of all the Reserves in the Hlaing sub-division were completely renewed. This was rendered necessary on account of encroachments.

Assam. Berar, Ajmere, Coorg, Baluchistan.

23. In Assam boundary work received considerable attention; so also in Berar, Ajmere, and Coorg. In Baluchistan no new demarcation is required, only small areas of State Forests having as yet been set apart.

CHAPTER II.

Surveys and Working-Plans.

Surveys.

24. During the year under review the principal operations of the Forest Survey Branch were carried on in the Melghat Forests in Berar, with smaller parties in South Berar, in Garhwal in the North-Western Provinces, and in Chamba and Bashahr in the Punjab.

The area plane-tabled was 410 square miles, against 74 square miles in the previous year; and 1,017 square miles were triangulated and 168 square miles traversed, against 1,103 and 566 square miles, respectively, last year.

The expenditure amounted to Rs. 54,627, against Rs. 48,156 in the previous year.

In British Burma the Topographical Survey Party completed 315 square miles on the 4″ scale at a cost of Rs. 320 per square mile, and 37 square miles on the 2″ scale at a cost of Rs. 135 per square mile, the average for the whole being Rs. 298 per square mile, or Rs. 21 cheaper than last year.

In Bombay the forests are being surveyed by the Topographical Survey Department, the work this year being in the Tanna, Panch Mahals, and Dang Districts.

In other provinces nothing was done but minor surveying work of particular blocks of forests, mapping from previous data, checking of boundaries, &c.

25. The Surveyor General in his review of the Forest Survey Branch Report, and in several special letters on the subject addressed to the Government of India, remarked, with reference to Forest Surveys that were being at the time carried out in the Punjab and in Berar, that the existence of a separate Forest Survey Branch was a mistaken policy. After some correspondence on the subject, a meeting was convened by the Secretary in the Revenue and Agricultural Department, and it was decided that the Revenue Survey and that forming part of the Forest Department had as yet in nowise clashed, nor had there ever been any necessity for working twice over the same ground by parties of each of the two separate surveys; but that, in order to avoid the possibility of this happening, Local Governments should give 18 months' notice of their requirements with regard to Forest Surveys, and that the agency by which such surveys should be executed should be settled in consultation between the Surveyor General and the Inspector General of Forests.

The desirability, if not the necessity, of having a separate Survey Branch, with a technical knowledge of Forestry, in charge of Forest Surveys, especially such as were intended to form the basis of working-plans, was recognized, as otherwise a much more detailed preliminary demarcation of the various features of the forests in the country to be surveyed would be required; and, finally, the high class work turned out by the Forest Survey Branch was unanimously acknowledged.

Working-Plans.

26. In the Pegu Circle, British Burma, working-plans for the Kôn Bilin Reserve of 24 square miles, the Kadin Bilin Reserve of 79 square miles, and the Mokka Reserve of 38 square miles were submitted for the professional inspection of the Inspector General of Forests. After examination, they were returned for local reconsideration of the remarks made by him with reference to some technical mistakes.

In the North-Western Provinces a working-plan for the Mundali Deodar Forest in the Jaunsar Himalaya was submitted, and was sanctioned by the Local Government. This plan is particularly detailed; and, though such detail was not required for a forest of as little importance as the Mundali Reserve, for

the produce of which no permanent demand is as yet ensured, and though such detail will be considerably curtailed in future plans for Deodar forests, both the theory and forestry contained in the plan are unquestionable; and it will always serve as an excellent model for the instruction of the students at the Forest School at Dehra.

Burma, the North-Western Provinces and Oudh, and the Punjab have organized special Divisions for the preparation of working-plans; and in Bombay sanction for the staff necessary for a similar organization was accorded during the year, and two Officers have for this purpose been added to the Controlling Staff. Assam and the Central Provinces are also about to start Working-Plans Divisions.

Annual plans of operation continue to have more and more attention paid to them, and every year witnesses a greater amount of method in the working of the forests.

27. Data for more or less elaborate forecasts for the working of the more important forests are being collected in almost every province, and a considerable number of working-plans are in an advanced state of preparation. Amongst the more important of those regarding which the Inspector General of Forests has information are the plans for the Chamba Leased Forests in the Punjab and the Changa Manga Plantation, for which a revised plan is being prepared; in the North-Western Provinces, working-plans for the Naini Tal and Ranikhet Forests will appear almost immediately, and an elaborate plan for the Dún Forests may be confidently expected within the present season. A working-plan for the Kheri Forests in Oudh is under consideration. These latter forests were inspected in March last by the Inspector General of Forests, who recorded some suggestions regarding the preparation of the working-plan in an Inspection Note on the Oudh Forests. An early completion of this working-plan is desirable; the construction of a tramway is under consideration in connection with it.

The collection of data for a working-plan of the Nalkeri Forest in Coorg has been completed, and the forecast may be expected within the present year. This plan is of considerable importance, as it is intended to open out the forest in question by means of tramways involving considerable expenditure.

28. There is a certain tendency in several provinces to frame working-plans too elaborately, and in this regard to follow too closely the examples of continental countries in Europe, where a more advanced state of forestry not only permits, but necessitates, greater accuracy in every detail. However desirable it may be to attain this state at some future time, the present organization of the Department in India does not permit of it; neither Officers nor time are available, nor is the money, and it is of great importance that less elaborate plans should be made, so that the whole forest area under the control of the Forest Department may be gone over more rapidly.

These remarks have special reference to forests whence the produce is extracted by purchasers, under what is known as the *khám tahsíl* or *chanki* system. There is doubtless a certain number of important forests where a demand exists equalling or exceeding their capabilities, and for such more detailed working-plans are required.

CHAPTER III.

Protection and Improvement.

I.—PROTECTION.

General.

29. The following statement shows that 22,566 offences were taken cognizance of under the Forest Acts; that 17,076 of these were compounded, which may be accepted as a proof of admission of guilt on the part of the offenders; and that 5,490 cases were taken into Court, resulting in an average conviction of 76 per cent. These figures appear to prove a fair and just application of the penal sections of the Forest Acts:—

Province.	Number of new Cases during the year.			Proportion of Convictions to total number of Cases decided by the Courts, in per cent.
	Taken into Court.	Compounded.	Total.	
Bengal	443	800	1,243	87
North-Western Provinces and Oudh.	230	570	800	82
Punjab	1,074	831	1,905	75
Central Provinces	312	11,160	11,472	86
British Burma	194	64	258	82
Assam	55	34	89	69
Coorg	8	...	8	100
Ajmere	47	48	95	90
Baluchistan	2	9	11	...
Andamans	12	...	12	33
Total ...	2,377	13,516	15,893	80
Berar	308	...	308	84
Total Bengal Presidency ...	2,685	13,516	16,201	81
Madras	1,761	52*	1,816	70
Bombay	1,041	3,508	4,549	76
Grand Total ...	5,490	17,076	22,566	76

* Only in the Northern Circle. The figures for the Southern Circle have not been given separately.

30. **Bengal.**

Year.	Number of Cases.		Total.	Percentage of Convictions to total number of Cases decided by the Courts.
	Taken into Court.	Compounded under Section 67 of the Forest Act.		
1884-85	443	800	1,243	87
1883-84	413	1,816	2,229	89
Increase or decrease in 1884-85	30	—1,016	—986	—2

There has been a large decrease in the number of cases compounded, due to closer supervision in the Sundarbans: this is very satisfactory. A high percentage of convictions has also been maintained.

31. **North-Western Provinces and Oudh.**

Circle.	Number of Cases.			Percentage of Convictions to total Number of Cases decided by the Courts.
	Taken into Court.	Compounded under section 67 of the Forest Act.	Total.	
Central	118	438	556	88
Oudh	77	25	102	78
School	35	107	142	70
Total in 1884-85	230	570	800	82
„ 1883-84 ...	157	557	714	82
Increase or decrease in 1884-85	73	13	86	...

Although there has been an increase over 1883-84, the total number of cases is still very small. The results in the School Circle are more satisfactory than they were in 1883-84.

An enquiry into the working of Section 67 of the Forest Act in the hands of Forest Officers showed that the powers thereby conferred had been very reasonably exercised.

32. **Punjab.**

Year.	Number of Cases.			Percentage of Convictions to total Number of Cases decided by the Courts.
	Taken into Court.	Compounded under Section 67 of the Forest Act.	Total.	
1884-85	1,074	831	1,905	75
1883-84	968	298	1,266	77
Increase or decrease in 1884-85 ...	106	533	639	—2

There has been an increase in the number of cases taken into Court, and also in those compounded; and the Lieutenant-Governor of the Punjab has called upon the district officials to assist in protecting the rights of Government in Forest property. A hitherto unsatisfactory state of things in the Muzaffargarh District, owing to a misinterpretation of the law, has been authoritatively set at rest by a ruling of the Chief Court of the Punjab on a test case sent for trial.

33. **Central Provinces.**

Year.	Number of Cases.			Percentage of Convictions to total Number of Cases decided by the Courts.
	Taken into Court.	Compounded under Section 67 of the Forest Act.	Total.	
1884-85	312	11,160	11,472	86
1883-84	341	9,850	10,191	82
Increase or decrease in 1884-85 ...	—29	1,310	1,281	4

The number of cases taken into Court has decreased, and the percentage of convictions has risen from 82 to 86.

It is doubtful if the numbers of cases given as compounded are, rightly considered, Forest offences. It is believed that the majority of them are cases of so-called illicit grazing. But when, as in the Central Provinces, the grazing arrangements are on a wholesale scale for an entire village at a time, and where all the cattle of the village are habitually herded and graze together, and where also one license is issued to the whole village in the name of the headman, who is made responsible for collecting the revenue in exchange for the commission he gets—and if, in such a case, every defaulter in the village is treated as having grazed his cattle illicitly (*i.e.*, not having paid his fees within the delay granted)—then it seems rather to partake of the nature of a breach of contract than of an offence against the Forest law. A man who by arrangement pays for produce by instalments, and, having obtained his produce, fails to pay some instalment, has not extracted forest produce illicitly.

34. **British Burma.**

Circle.	Number of Cases.			Percentage of Convictions to total number of Cases decided by the Courts.
	Taken into Court.	Compounded under Section 66 of the Forest Act.	Total.	
Pegu	115	61	176	87
Tenasserim	79	3	82	75
Total in 1884-85	194	64	258	82
„ 1883-84	193	57	250	87
Increase or decrease in 1884-85 ...	1	7	8	—5

The number of offences remains very low. The percentage of convictions in the Tenasserim Circle has fallen from 86 in 1883-84 to 75 in 1884-85.

35. **Assam.**

Year.	Number of Cases.			Percentage of Convictions to total number of Cases decided by the Courts.
	Taken into Court.	Compounded under Section 67 of the Forest Act.	Total.	
1884-85	55	34	89	69
1883-84	86	45	131	65
Increase or decrease in 1884-85 ...	—31	—11	—42	4

Forest offences are still very few, and there has been a considerable decrease since last year. This is attributed to the fact that the intentions of Government, as expressed in the local rules, are being better understood, and that the people have within the District Forests the free use of all forest produce, except reserved timber.

Coorg.

36. The number of cases taken into Court was 8, and in all of them convictions were obtained.

37. Ajmere.

Year.	Number of Cases.			Percentage of Convictions to total number of Cases decided by the Courts.
	Taken into Court.	Compounded.	Total.	
1884-85	47	48	95	90
1883-84	31	36	67	90
Increase in 1884-85	16	12	28	...

The high percentage of convictions has been maintained; but, owing to the partial failure of the rains, and the consequent scarcity of fodder, the impounding of cattle for trespass increased.

38. Berar.

Year.	Number of Cases taken into Court.	Percentage of Convictions to total number of Cases decided by the Courts.
1884-85	308	84
1883-84	381	88
Increase or decrease in 1884-85	—73	1

The percentage of convictions is good, while the total number of cases is small, and protection was efficient.

39. Madras.

Circle.	Prosecutions.		Acquittals.
	1883-84.	1884-85.	1884-85.
Northern	606	845	165
Southern	588	1,031	310
Total ...	1,194	1,876	475

Compounded cases have been classed as acquittals, so that it is not possible to examine into the working of section 55 of the Madras Forest Act.

40. Bombay.

Circle.	Number of Cases.			Percentage of Convictions to total number of Cases decided by the Courts.
	Taken into Court.	Compounded under Section 67 of the Forest Act.	Total.	
Northern	796	2,310	3,106	77
Southern	147	359	506	76
Sind	98	839	937	69
Total in 1884-85	1,041	3,508	4,549	76
„ 1883-84	1,150	1,748	2,898	75
Increase or decrease in 1884-85 ...	—109	1,760	1,651	1

Except in the Tanna District, protection has been efficient, and Forest Officers have everywhere exercised their powers under Section 67 of the Forest Act with freedom and judgment.

II.—PROTECTION FROM FIRE.

General.

41. Tables were compiled during the year, giving the history of the fire-protection of each block of forest, as shown by the yearly extent of area attempted, burnt, and protected, with the percentage of failure and the cost per acre. These were circulated to all Conservators, who were asked to examine and report on the correctness of the tables. But, as the work of correcting the figures and making them agree with previous Reports in communication with the local Conservators is not yet finished, it is to be regretted that the abstract of the tables can only be exhibited (Appendix A) in a form still open to corrections and modifications, which, it is hoped, however, will be made before the next Review appears.

In the tables at present appended, it has been assumed that all benefits derived from previous fire-protection are lost by the occurrence of a single conflagration, and areas thus burnt have been entirely omitted. Without special knowledge of each forest, no other system was feasible; but as the figures now stand, they represent the worst possibility of the case, which in reality wears a much more favourable aspect. It is the general opinion of those Officers who have written about the question that the present estimates of the benefits conferred by previous fire-protection have been greatly undervalued; and the Officiating Inspector General of Forests has been able to verify, from numerous inspections of forests in the Central Provinces and Oudh which were burnt through after a continuous protection for a number of years, that the benefits derived from previous protection were by no means eradicated by the occurrence of a single fire. In many instances, it required accurate inspection to recognize the traces of such fire, which had occurred more than a year previously. In future years the tables should accordingly be modified, but only on the strength of actual inspections. It is also desirable that the fire-protected areas, which as yet are still shown in large blocks, should, whenever possible, be broken up into compartments in order to enable the Conservators to locate fires, which at present is extremely difficult, especially when some time has elapsed after their occurrence. The Officiating Inspector General of Forests prepared a table of this sort for the Kheri Forests, which is appended (Appendix B), and which might serve as a model for a record to be kept by every Divisional Officer.

42. The following table exhibits the areas under fire-protection and the results of the year's operations:—

Province.	Area, in square miles.		Percentage of Failures to Area Attempted.	Cost.		Year when Fire Conservancy commenced.	Proportion of area under Fire-protection to total area of Reserves, in per cent.
	Attempted.	Protected.		Per square mile protected.	Per acre protected.		
				Rs.	Pies.		
Bengal	1,259	980	22	16	5	1872	26
North-Western Provinces and Oudh.	1,156	1,150	·52	33	10	1869	34
Punjab	324	324	...	3	1	1871	23
Central Provinces ...	1,434	1,399	2	13	4	1864	·7
British Burma ...	292	275	·6	56	17	1857	·8
Assam	210	199	5	52	16	1873	9
Coorg	194	176	9	18	5	1876	81
Ajmere	144	144	...	4	1	1874	100
Total ...	5,013	4,647	7	22	7	...	14
Berar	1,046	1023	2	5	2	1870	68
Total Bengal Presidency	6,059	5,670	6	10	6	..	16
Madras	1,465	1,427	3	16	5	1867	45
Bombay	8,547	7,983	7	1	...	1874	92
Grand Total	16,071	15,080	6	9	3	...	32

The above table shows that 16 per cent. of the reserved areas in the Bengal Presidency, and 45 per cent. of those in Madras, were specially fire-protected. This does not, however, embrace the whole area that was not burnt during the year, as (especially in Bengal and the north of India) considerable areas are, as a rule, free from fires, though not specially protected.

43. The time has happily passed when a serious discussion could be raised as to whether the occurrence of forest fires did not perhaps benefit the country at large, and even the forest growth itself; and it is now almost universally recognized that such fires are an unmitigated evil, and that the barren condition of so many hill-sides in India is almost entirely due to their annual occurrence. The careful experiments and detailed inquiries which are at present being carried out in the School Circle, regarding the influence of the fire-protection of drainage areas on the regulation of streams debouching from the Siwaliks and on the prevention of sudden floods, begin to yield most valuable data. The streams have already contracted and assumed more regular and better defined courses, and the duration of the highest flood at a lower average level has materially increased. It requires only a few more years' experience to show that this was not due to other causes—such as exceptionally prolonged and steady rains—to enable us to make the most unquestionable deductions and to prove the physical possibility of preventing, or at least largely reducing, disasters caused by sudden floods. There can also be no doubt that a general suppression of the firing of the waste uncultivated areas in this country would have a most beneficial influence on the climate, for there is good reason to believe that the stopping of *kumri* and *dahya* cultivation in the Central Provinces, which at one time laid bare thousands of square miles, has somewhat augmented the rainfall of that country. A general fire-protection would have probably even more marked results, but many prejudices must be overcome before this can be effected, and considerable changes must take place in the customs of the people before the annual burning of the grazing areas is abandoned or can be prohibited. There is really no necessity for firing grass lands; for where grass is valuable—as, for instance, in the vicinity of Simla and near the Kalka-Simla road—the grazing areas are not burnt, and no deterioration of the grass crop can be observed.

44. The enormous progress that has been made in the fire-protection of Government Reserves, at the cost of hard work, anxiety, and exposure on the part of Officers of every grade, can hardly be sufficiently appreciated from the mere study of the tables appended. The work is highly creditable to the Forest Department. Nevertheless, new areas should be added year by year, till every acre of Government forest and waste lands is fire-protected. Experience already proves that trouble and money expended will be amply repaid by the final results.

The ultimate prohibition of the firing of private forests and waste lands, which is still the order of the day throughout the length and breadth of the country, should never be lost sight of, though it may be still impracticable to enforce such prohibition at the present time.

45. **Bengal.**

Year.	Area Attempted.	Failures.	Area Protected.	Percentage of Failures to Area Attempted.	Cost per square mile Protected.
	Sq. miles.	Sq. miles.	Sq. miles.		Rs.
1884-85	1,259	279	980	22	16
1883-84	828	60	768	7	21
Increase or decrease in 1884-85 ...	431	219	212	15	—5

The area attempted is again largely in excess of the previous year; and although the percentage of failures was above last year's figure, the forests

which had been protected for a longer period were mostly preserved, the failures being in the newly attempted areas.

The new table showing the areas of Reserved Forests that escaped being burnt, whether with or without special measures, is very interesting. It shows that out of 4,882 square miles of Reserved Forests, 1,747 square miles are liable to annual conflagrations, and 3,135 escaped fire without special protection.

46. **North-Western Provinces and Oudh.**

Circle.	Area Attempted.	Failures.	Area Protected.	Percentage of Failures to Area Attempted.	Cost per square mile Protected.
	Sq. miles.	Sq. miles.	Sq. miles.		Rs.
Central	402	1	401	0·25	40
Oudh	397	4	393	1·01	30
School	357	1	356	0·28	29
Total in 1884-85 ...	1,156	6	1,150	0·52	33
„ 1883-84 ...	959	85	874	8·65	43
Increase or decrease in 1884-85 ...	197	—79	276	—8·13	—10

The results of fire-protection, as shown by the above table, have been most satisfactory, and they are the most favourable on record. It is not to be expected that this high degree of success can be maintained, for the season was a most favourable one. The area attempted has risen from 28 to 34 per cent. of the total area of Reserved Forests in the North-Western Provinces and Oudh. The balance, however, still contains many valuable forests, the protection of which is essential.

47. **Punjab.**

Year.	Area Attempted.	Failures.	Area Protected.	Percentage of Failures to Area Attempted.	Cost per square mile Protected.
	Sq. miles.	Sq. miles.	Sq. miles.		Rs.
1884-85	324	...	324	...	3
1883-84	76	6	70	8	8
Increase or decrease in 1884-85 ...	248	—6	254	—8	—5

The Government Forests in the Punjab are but little liable to burn, and, with few exceptions, no special measures to protect them from fire are taken or required. Hence the total expenses only amounted to Rs. 1,065 during the whole year.

In the Hazara District, where the villagers were getting into the habit of firing the Government Forests, the strong measure was had recourse to of closing against grazing and suspending the rights in the areas burnt—an action which is highly commendable and deserves imitation.

48. **Central Provinces.**

Year.	Area Attempted.	Failures.	Area Protected.	Percentage of Failures to Area Attempted.	Cost per square mile Protected.
	Sq. miles.	Sq. miles.	Sq. miles.		Rs. A. P.
1884-85	1,434	35	1,399	2	13 4 0
1883-84	1,429	63	1,366	4	12 8 8
Increase or decrease in 1884-85 ...	5	—28	33	—2	0 11 4

The area attempted is now 41 per cent. of the total area of 1st class Reserves, but only 7 per cent. of the total 19,440 square miles of Reserved Forests in the province.

Although the Central Provinces head the list in the matter of fire-protection, in the magnitude of the operations, the success of the undertaking on the whole, and the cheapness with which this success is attained, still it is believed that much more might be done in the vast areas at the disposal of Government in the 2nd class Reserves.

The operations of the year have been most successful, for, of the area burnt in the year under review, all but one square mile was in forests peculiarly liable to be fired by dakaits.

49. **British Burma.**

Circle.	Area Attempted.	Failures.	Area Protected.	Percentage of Failures to Area Attempted.	Cost per square mile Protected.
	Sq. miles.	Sq. miles.	Sq. miles.		Rs.
Pegu	165	5	160	3	65
Tenasserim	127	12	115	9	43
Total in 1884-85 ...	292	17	275	6	56
„ 1883-84 ...	286	25	261	9	54
Increase or decrease in 1884-85 ...	6	—8	14	—3	2

The area attempted has again increased, and the success obtained has also increased. But still only 8 per cent. of the Reserved Forests, excluding *taungya* areas, are fire-protected, and the cost per square mile is the largest in any province. Experience shows that the cost per acre will decrease as larger areas are taken in hand. There is a very great deal still to be done in restricting the universal firing of the forests which obtains in Burma. This province contains large areas which are not exposed to annual conflagrations.

50. **Assam.**

Year.	Area Attempted.	Failures.	Area Protected.	Percentage of Failures to Area Attempted.	Cost per square mile Protected.
	Sq. miles.	Sq. miles.	Sq. miles.		Rs.
1884-85	210	11	199	5	52
1883-84	209	61	148	29	64
Increase or decrease in 1884-85 ...	1	—50	51	—24	—12

A very great improvement has taken place in fire-protection in Assam, the percentage of failures having fallen from 29 to 5 per cent., and the cost from Rs. 64 to 52 per square mile protected. But the cost is still very high, and will continue to be so until larger areas are fire-protected, and until the vast areas of savannah land outside the Forest Reserves have been brought under cultivation, or become otherwise less liable to burn.

In all, 1,640 square miles are reported to be not liable, as a rule, to burn, and probably continuous immunity from fire will ultimately be secured for this area.

51. **Coorg.**

Year.	Area Attempted.	Failures.	Area Protected.	Percentage of Failures to Area Attempted.	Cost per square mile Protected.
	Sq. miles.	Sq. miles.	Sq. miles.		Rs.
1884-85	194	18	176	9	18
1883-84	193	15	178	8	11
Increase or decrease in 1884-85 ...	1	3	—2	1	7

The result of fire-protection has not been so successful as in the previous year, though the cost has risen considerably.

It is satisfactory, however, to learn that the Western Ghât Forests, comprising 349 square miles, are not liable to annual conflagrations.

52. **Ajmere.**

Year.	Area Attempted.	Failures.	Area Protected.	Percentage of Failures to Area Attempted.	Cost per square mile Protected.
	Sq. miles.	Acres.	Sq. miles.		Rs. A. P.
1884-85	144	47	144	0·051	4 4 7
1883-84	139	5	139	0·006	3 15 8
Increase or decrease in 1884-85 ...	5	42	5	0·045	0 4 11

Of the 144 square miles attempted, 17½ square miles do not require any special measures.

53. **Berar.**

Year.	Area Attempted.	Failures.	Area Protected.	Percentage of Failures to Area Attempted.	Cost per square mile Protected.
	Sq. miles.	Sq. miles.	Sq. miles.		Rs.
1884-85	1,046	23	1,023	2	5
1883-84	1,048	76	972	7	7
Increase or decrease in 1884-85 ...	—2	—53	51	—5	—2

Fire-protection has been more successful, as well as cheaper, than last year. In cheapness of fire-work, Berar is first among all provinces, and it contains the largest compact blocks under fire-protection in the whole of India, in the Bairagarh Reserve of 403 square miles and the Gugumal Reserve of 180 square miles.

54. **Madras.**

Circle.	Area Attempted.	Failures.	Area Protected.	Percentage of Failures to Area Attempted.	Cost per square mile Protected.
	Sq. miles.	Sq. miles.	Sq. miles.		Rs.
Northern	720	24	696	3	15·5
Southern	745	14	731	2	15·6
Total in 1884-85 ...	1,465	38	1,427	3	15·5
„ 1883-84 ...	901	36	865	4	10·5
Increase or decrease in 1884-85 ...	564	2	562	—1	5·0

The area attempted shows a large increase, while the cost has also risen; but the success has been very good. As yet only 16 per cent. of the forests at the disposal of Government are fire-protected; but this proportion, too, is rapidly increasing.

55. **Bombay.**

Circle.	Area Attempted.	Failures.	Area Protected.	Percentage of Failures to Area Attempted.	Cost per square mile Protected.
	Sq. miles.	Sq. miles.	Sq. miles.		Annas.
Northern	4,852	205	4,647	4	2
Southern	3,059	356	2,703	12	10
Sind	636	3	633	0·47	3
Total in 1884-85 ...	8,547	564	7,983	7	5
„ 1883-84 ...	12,059	2,130	9,929	18	5
Increase or decrease in 1884-85 ...	—3,512	—1,566	1,946	—11	

The area attempted is 61 per cent. of all the Forests, Reserved and Protected, while the very small cost per square mile seems to point to the fact that extensive areas are included in the fire-protection table which are not usually liable to burn.

III.—REPRODUCTION OF THE FORESTS.

General.

56. With every new year it becomes a matter of greater certainty that over a large extent of the country, when the conditions of climate and soil are favourable, protection alone suffices to ensure reproduction; and even areas which have been ruined by former ill-treatment, recover in many parts of the Empire with a rapidity unknown in countries with a less rapid decomposition of soils and a more sluggish vegetation. There are doubtless many localities, in which progress is not appreciable during a term of a few years. In some cases such areas are formed by savannahs, where, under the influence of a strong monsoon, grass, sometimes reaching a height of 15 feet and more, seems to render the establishment of arbori-vegetation an impossibility; but even in such localities *Bombax malabaricum*, *Butea frondosa*, *Albizzia procera*, *Acacia arabica*, *Dalbergia Sissoo*, and others, varying according to geographical situation, take advantage of openings in these seas of grass, and show above the surface after comparatively few years. In other places it is a hard, barren surface-soil, which for a time seems to resist every effort of nature; and sometimes it is a dense cover of felty grass. In many localities the decomposed surface-soil has entirely disappeared, and this represents the worst feature, especially where the exposed rocks and stones are hard and the rainfall is scanty.

The reports received regarding natural reproduction in protected areas are generally encouraging, and are entirely borne out by observations made by the Officiating Inspector General of Forests during his winter tours. Records of the existing state of natural reproduction are kept with considerable care by many Divisional Forest Officers. Such records will serve for comparison with future results, and are not only interesting and instructive, but are also necessary, for without such records the benefits derived from protection cannot be gauged, and are frequently underrated.

The areas with which the Forest Department has to deal in India are so out of proportion to the income derived and the strength of the Department in all its branches, that artificial cultivation is of necessity reduced to localities where no success can by any possibility be obtained by protection only, or where the state of the market permits it on financial considerations.

57. The area of cultural operations is exhibited in the following table:—

Province.	Area, in acres.			
	At the commencement of the year.	Added during the year.	Excluded during the year.	At the close of the year.
Bengal	2,568	367	...	2,935
North-Western Provinces and Oudh	3,718	490	...	4,208
Punjab	17,940	368	...	18,308
Central Provinces	...	...	...	...
British Burma	13,415	1,748	...	15,163
Assam	1,296	165	...	1,461
Coorg	830	157	...	987
Ajmere	355	46	...	401
Baluchistan	51	6	...	57
Total ...	40,173	3,347	...	43,520
Berar	2,660	879	...	3,539
Total Bengal Presidency ...	42,833	4,226	...	47,059
Madras	40,850	11,735	...	52,585
Bombay	75,268	...	5,134	70,134
Grand Total ...	158,951	10,827	...	169,778

Bengal.

58. Much interest is taken in the subject of natural reproduction, and the effects of fire-protection and restricted grazing are carefully noted by all Forest Officers. The results are reported as favourable throughout. In the Buxa *sál* forest, in the Buxa Division, natural reproduction has been greatly assisted by dragging light logs through the forests, which crushed the grass and wounded the soil.

The record of artificial reproduction stands as follows :—

	At the commencement of the year.	Added.	Excluded.	At the close of the year.
	Acres.	Acres.	Acres.	Acres.
Regular plantations	1,700	301	...	2,001
Other cultural operations ...	868	111	45	934
Total in 1884-85 ...	2,568	367	...	2,935
„ 1883-84 ...	2,439	129	...	2,568

This gives an increase of 301 acres of regular plantations and of 66 acres of other cultural operations. Creeper cutting is considered very important; it extended during the year under review over 17,446 acres, and continuous extension is promised.

North-Western Provinces and Oudh.

59. The effect of protection on natural reproduction has been generally noted as very favourable. The protected portion of the Motipur Forest in Bahraich, which was never burnt since its protection was first attempted, is densely stocked, and observations made in Kheri show that a protection extending over five successive years will, where the forest is sufficiently open in these localities, ensure a very fair reproduction. The reproduction of *sál* under *asseina* is remarkable; this is due to the high canopy of the latter, and to the fact that *asseina* is out of leaf when the *sál* seeds. In the hill forests the natural reproduction of deodar is said to be very promising.

The area artificially cultivated has been increased from 3,717 to 4,208 acres.

Punjab.

60. The subject of the reproduction of Deodar, both natural and artificial, in the Punjab hills has occupied much attention; and it seems to be allowed that although natural reproduction can be and, with the assistance of fire-protection, is to be mainly depended on for the restocking of these forests, nevertheless, artificial planting may be and often is necessary on grass slopes without parent trees, or when it is desirable to establish the tree in Oak and *Pinus excelsa* forests, or when thickets of *Indigofera* or *Parrottia* prevent the springing up of a natural crop.

The following abstract records the state of cultural operations :—

	At the commencement of the year.	Added.	Excluded.	At the close of the year.
	Acres.	Acres.	Acres.	Acres.
Regular plantations	15,367	86	...	15,453
Cultural operations	2,573	370	88	2,855
Total ...	17,940	368	...	18,308

The decrease in the area is due to credit having been erroneously taken in previous returns for certain areas.

Central Provinces.

61. The progress of natural reproduction in areas under protection from fire has been favourably reported on, and the preponderance which Teak assumes in the young growth over vast areas of forests promises well for their future value. The dibbling operations, which were some years ago carried out in several parts of the country, begin to have effect by the appearance of seedlings above the grass.

British Burma.

62. The areas treated by sowing and planting operations increased during the year by 1,748 acres, of which 1,690 were in the form of Teak-*taungya* plantations. Only 58 acres were added to the regular plantations. No other cultural operations were undertaken during the year by reason of there being no flowering of the bamboos, on which the possibility of such works depends to a great extent.

The state of artificial reproduction is now represented as follows :—

Circle.	Regular Plantations.	Taungya Plantations.	Cultural Operations.	Total.
	Acres.	Acres.	Acres.	Acres.
Pegu	3,670	6,333	3,213	13,216
Tenasserim	23	1,816	108	1,947
TOTAL ...	3,693	8,149	3,321	15,163

Assam.

63. Natural reproduction in a climate like that of Assam is of course most luxuriant, and nothing but protection is required to assist it.

Artificial cultivation is consequently for the present confined mainly to the rubber tree; 145 acres of plantation were added, bringing up the total to 1,168 acres, which have cost Rs. 73½ each.

Coorg.

64. The area of the teak plantations was increased by 134 acres, and of the sandalwood by 28 acres. There are now 949 acres under artificial plantation, of which 563 are teak, 301 sandal, and 85 fuel. There is no information about the state of natural reproduction in fire-protected areas as compared with those that burn annually.

Ajmere.

65. The benefits of fire-protection have been acknowledged on all sides. An opportunity occurred of giving most tangible proof of this. The grass crop had failed owing to the partial failure of the rains, and the Reserves were thereupon thrown open to grazing, thus affording immense relief to the cattle of the District. The Reserves yielded also an immense amount of fodder grass, which was cut and removed. Young tree growth begins to top the grass in every direction.

Berar.

66. Nothing was attempted in the way of regular plantations.

In south Berar natural regeneration is reported to be good in forests that have been protected from fire for six years. It is stated by the Conservator that the exclusion of cattle, as well as of fire, produced such a heavy crop of grass as to interfere with arbori-reproduction, and cattle were again admitted under restrictions. This is, in the opinion of the Officiating Inspector General of Forests, a great mistake. Cattle should certainly not have been admitted as long as they can tread seedlings under foot. In the Bairagarh Reserve, protected for 17 years, the natural reproduction is remarkable.

Madras.

67. The opinion is universal that fire-protection and the exclusion of cattle have had most beneficial results on the natural reproduction of the forests.

Owing to further corrections of area, the regular plantations are shown as consisting of 18,947 acres, against 35,997 in 1883-84.

Bombay.

68. Natural reproduction is reported as having noticeably improved in the closed forests (Northern Circle), and as having been materially assisted by fire-protection and closing (Southern Circle). Reproduction has quite changed the features of the southern portion of Bijapur since conservancy began; while in Sind, large areas, hitherto closed, were opened to grazing, the new growth having attained sufficient height to be thought safe from harm.

Reproduction, both of grass and trees, on the previously barren, but now protected, hill-sides in the Poona District is as remarkable a result of forest protection as can be found.

Throughout the Northern Circle reproduction was extensively assisted by broad-cast sowings, dibbling, and even planting, which were to a great extent carried on by the protective establishment in addition to their other duties. The favourable results of the former operations warrant their being continued. It is a pleasing contrast to see a Forest Reserve densely covered with young vegetation side by side with a barren hill-side furrowed by rain and unable to produce a decent grass crop.

IV.—COMMUNICATIONS AND BUILDINGS.

69. The outlay under this head during the year is as follows :—

Province.	Roads and Bridges.	Buildings.	Other works.	Total.
	Rs.	Rs.	Rs.	Rs.
Bengal	12,588	24,493	199	37,280
North-Western Provinces and Oudh ...	29,268	9,908	1,136	40,312
	20,370	17,146	3,378	40,894
	10,943	8,713	1,130	20,786
	60,581	35,767	5,644	1,01,992
Punjab	4,272	6,508	29	10,809
Central Provinces	2,034	1,845	1,103	5,882
British Burma	2,278	6,360	5,120	13,758
	...	3,573	...	3,573
	2,278	9,933	5,120	17,331
Assam	12,953	10,873	241	24,067
Coorg	760	952	...	1,712
Ajmere	114	215	643	972
Baluchistan	...	192	...	192
Forest Surveys (Imperial) ...	...	...	...	...
Forest School	...	...	...	...
Total ...	96,480	90,778	12,979	2,00,237
Berar	15,461	597	187	16,245
Forests Surveys (Berar)	...	398	...	398
Total Bengal Presidency ...	1,11,941	91,773	13,166	2,16,880
Madras	6,050	11,232	...	17,282
	12,717	17,213	543	30,473
	18,767	28,445	543	47,755
Bombay	1,066	2,279	605	3,950
	2,005	6,041	477	8,523
	2	760	...	762
	3,073	9,080	1,082	13,235
GRAND TOTAL ...	1,33,781	1,29,298	14,791	2,77,870

70. The totals for the Bengal Presidency compare as follows with those of the five previous years :—

	Rs.
1879-80	1,66,193
1880-81	1,38,324
1881-82	1,88,027
1882-83	1,99,066
1883-84	1,81,998
1884-85	2,16,880
Average per annum ...	1,82,248

71. Under *Roads and Bridges*, there were in—

BENGAL.

	Miles.	Cost. Rs.
New roads constructed	105	...
Old roads maintained	320	...
Total ...	425	12,588

The Chota Nagpore Division, which much required opening out, received special attention.

NORTH-WESTERN PROVINCES AND OUDH.

	Miles.	Cost. Rs.
Central Circle—		
New roads	31	6,449
Old „	588	22,819
Total ...	619	29,268

The total mileage of roads in this Circle under the Forest Department now amounts to 1,574 miles.

	Miles.	Cost. Rs.
Oudh Circle—		
New roads	103	...
Old „	878	...
Total ...	981	20,370

The new roads were mostly in Pilibhit, Bahraich and Bhira.

	Miles.	Cost. Rs.
School Circle—		
New roads	22½	3,076
Old „	691½	6,919
Sledge „	...	366
Total ...	714	10,361
Bridges repaired ...	...	582
Total ...		10,943

Similarly detailed information is not available from the other provinces, the expenditure in which was, moreover, quite normal. In Assam the principal work was the construction of the Dambu cart-road, which will open communication with one of the richest portions of the Garo Hills.

During the last eight years, *i.e.*, from 1877-78 to 1884-85, the gross outlay on roads and bridges in the Bengal Presidency has been Rs. 6,18,000, or about 2¼ per cent. of the gross charges of the Department under all heads.

72. *Rest-houses.*—In Bengal the total outlay of Rs. 24,493 under Buildings is thus accounted for—

	Rs.
Purchase and repair of head-quarter bungalows ...	8,337
Construction of rest-houses, range-houses, and other buildings in the forests.	10,998
Repairs	5,158
Total ...	24,493

In the North-Western Provinces and Oudh :—

Central Circle.—The outlay is thus classified—

	Rs.
Officers' rest-houses	3,790
Permanent chaukis and subordinates' houses	3,646
Temporary „	101
Repairs	2,371
Total ...	9,908

Oudh Circle.—The large sum of Rs. 17,146 was spent mostly on four new rest-houses, which, however, were not completed during the year.

School Circle.—The expenditure was as follows :—

	Rs.
Officers' rest-houses	2,887
Subordinates' houses	1,409
Chaukis, &c.	1,521
Repairs	2,896
Total ...	8,713

In the Punjab the expenditure of Rs. 6,508 was mostly on maintenance and improvement of existing buildings, the Bashahr Division requiring Rs. 2,308, or more than one-third of the whole.

In the Central Provinces the expenditure was infinitesimal, considering the magnitude of the forest area and revenue.

So also in British Burma, the Pegu Circle spending less than one per cent. of its expenditure during the year on buildings, and the Tenasserim Circle only 1½ per cent., while Assam spent 11·5 per cent.

In the Bengal Presidency the expenditure on buildings since the year 1877-78 has been about 2¼ per cent. of the gross expenditure, or Rs. 6,19,576.

V.—SUMMARY OF DEMARCATION AND IMPROVEMENT OF FORESTS.

73. The expenditure under these heads during the year is as follows :—

Province.	Demarcation.	Compensation for land and rights.	Surveys and working-plans.	Plantations.	Protection from fire.	Other works.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	10,309	40	1,722	10,500	15,901	1,280	39,752
	1,032	...	2,692	3,557	16,916	1,712	25,909
North-Western Provinces and Oudh.	4,303	21	...	6,164	11,107	9,138	30,823
	2,061	750	2,165	4,139	10,232	2,534	22,181
	7,396	771	5,157	13,860	38,345	13,384	78,913
Punjab	8,396	5,241	1,962	49,144	926	2,011	67,680
Central Provinces	10,480	60,010	1,538	406	17,585	3,730	93,779
	4,284	277	8,081	29,075	11,342	424	53,483
British Burma	357	60	73	3,784	4,377	83	8,734
	4,641	337	8,164	32,859	15,719	507	62,217
Assam	8,192	525	7,803	8,371	9,930	7,963	43,084
Coorg	1,137	...	1,905	16,773	3,185	38	23,028
Ajmere	54	...	...	2,404	604	1,059	3,121
Baluchistan	3	...	...	320	...	91	414
Forest Surveys (Imperial) ...	...	...	2,110	...	...	...	2,110
Forest School	...	...	...	...	...	...	...
Total ...	50,908	66,954	30,341	1,33,637	1,02,195	30,063	4,14,098
Berar	674	1,059	...	1,788	4,697	381	8,599
Forest Surveys (Berar) ...	...	...	5,018	...	...	...	5,018
Total Bengal Presidency ...	51,582	68,013	35,359	1,35,425	1,06,892	30,444	4,27,715
	11,071	2,306	36	29,726	9,653	1,715	55,407
Madras	11,092	9,050	1,249	40,697	9,302	20,591	91,971
	23,063	11,356	1,285	70,423	18,945	22,306	1,47,378
	1,694	39,984	4,430	6,850	973	1,72,752	2,26,683
	2,235	123	4,643	7,109	2,269	27,727	44,196
Bombay ...	2,174	69	6,314	4,367	299	10,148	23,371
	6,103	40,176	15,387	18,416	3,541	2,10,627	2,94,250
GRAND TOTAL ...	80,748	1,19,545	52,031	2,24,264	1,29,378	2,63,377	8,69,343

74. The following table shows the expenditure on demarcation and improvement of forests in the Bengal Presidency for the last six years :—

	Rs.
1879-80	2,55,647
1880-81	2,66,925
1881-82	3,22,449
1882-83	3,27,704
1883-84	3,58,629
1884-85	4,27,715
Average per annum ...	3,25,678

CHAPTER IV.

Working and Yield.

EXPLOITATION.

75. The exploitation of the various products of the forests is carried on in the Indian Government Forests in a great variety of ways, necessitated by the various customs and requirements of the very many localities in which the Indian forests are found. But it may be divided into two main heads—direct or departmental work, and indirect working by means of purchasers and consumers: this is the division adopted in Forest accounts and returns.

76. Departmental working always means that the material to be exported is selected and marked by professional men, and that the extraction of the material is supervised by the officials of the Forest Department. Sometimes it is necessary for the officials to raise the labour gangs for felling the material, and to pay them by the day, by the job, by the tree, &c. The trees have to be logged *in situ*, and even cut up, sawn, or fashioned more or less. In the case of fuel and small material, the produce may have to be classified and stacked on the *coupe*, or it may have to be carried to the nearest public road or forest depôt. Sometimes temporary paths and roads have to be made to permit of the extraction of the material. Some portions of the work may be done by daily payment, some by contract; but the material always remains the property of Government, until it reaches the place where it is sold. Government bears the whole cost of extraction, and takes the whole amount of the realization.

In the Deodar forests of the North-Western Himalaya, the departmental work is the most detailed on account of the generally difficult nature of the ground. Here the log has frequently to be sawn up on the spot into the form for which the demand exists—usually sleepers, beams, planks, &c. This material has then to be carried to the head of the tramway, or slide, or shoot, or cart-road, as the case may be. Part of this may be done by coolies, partly by dragging by means of cattle. Job work is resorted to whenever possible, the labourers being paid by the piece, by the score or hundred, or by the cubic foot.

Sometimes heavy works, such as tramways, slides, shoots, roads, bridges,* have to be undertaken; stores have to be established to feed large gangs of labourers, and food may also have to be bought by Government and issued to labourers at fixed rates, during the months that the roads are impassable to private enterprise on account of swollen rivers, snow, &c. In this kind of work there is every variety and every degree of detail.

In Burma, as the material to be exported is generally in the form of girdled trees, the whole business of felling, logging, rafting, floating, and carriage to final destination is given out on contract, the Forest officials simply seeing that the contractors obey the conditions of the contract. But the principle is the same—*viz.*, that the material remains the property of Government, that Government bears all the cost of extraction, and takes the whole of the money realized by the sale.

In the hill-stations of Darjeeling, Naini Tal, Ranikhet, and Chakrata, the material is mostly fuel, more rarely building timber. The forests here are not very extensive, and all that can safely be removed has to be carefully selected by the Forest Officers, and the felling and cutting are carried on under very close supervision. Government generally undertakes the carriage to depôts, as most of the consumption is by other Government Departments. But here, too, the material remains the property of the Forest Department, until handed over to other officials or sold to dealers.

* As the Bakani slide and the Changa Manga tramway in the Punjab; the sledge-way at Deota, and the Mandhal and Lambatach slides in the North-Western Provinces.

Similarly, fuel forests in the plains are frequently worked departmentally for the supply of railways; collieries are supplied with pit props, and depôts are opened in centres of consumption, to which are departmentally carried various kinds of forest produce in order to create a demand and open up a trade with some forest hitherto inaccessible; for this purpose roads have probably to be made, as in the Dambu Forest in Assam, the Melghat in Berar, and many other forests.

On account of all these expenses of carriage, of the distance of the big timber forests from the markets, and the consequent high price of labour, departmental operations do not always show so favourably, financially considered, as the indirect sytsem of working.

77. From this purely departmental system, we pass naturally to that under which the Forest Department selects the material to be removed, and sells it standing; the cutting and extraction are in this case done by and at the cost of the purchaser. This we have at present only in a few places in India, notably in the Dehra Dún. It is only applicable where the demand reaches the full potential capability of a forest; where the entire yield of a forest, both main and accessory, has a local market value; where there is a sale not only for the timber in the tree, but also for the residue of the working, the branch wood, and often also the leaves, fruit, and bark, and the grass which grows beneath it.

78. The third or indirect method of forest exploitation, and the one commonest over the majority of the areas under the management of the Forest Department, is that whereby the produce is sold and made over to the purchaser on foot, he having the selection of the individual tree to be felled, or of the produce to be removed. All the various methods or combinations of methods of indirect working may be grouped under—

The Permit or License system,
The Kham Tahsil system,
The Commutation system.

79. Under the Permit System, an endeavour is made—by defining in the permit the kind of produce, whether green or dry, timber, fuel, bamboos or grass, tree, pole or sapling, &c., and the locality within and from which it is removable—to secure some kind of sylvicultural method of working to the forest. The permit also either secures prepayment of the produce to be exported, or arranges how and when it shall be paid for; and it often prescribes by what road, by what means, and within what delay the produce may be removed. According to the forest, the demands made upon it, its accessibility, its difficulty of protection, &c., so the permit in various localities varies in what it aims at securing. But the underlying principle is that payment is provided for, and that the selection of the individual form of produce lies with the purchaser.

80. The next, or Kham Tahsil System, does not even aim at so much; it can only apply to unclosed forests, or at any rate to the unclosed portions of large blocks of forests. The forest is open to all ingress; but no one can leave the forest, having forest produce in his possession, without payment according to a fixed tariff, which is perfectly well known in the locality. Here, except by reserving separate species by name, or green wood as against dry, or by closing and notifying as closed particular spots, there is no let or hindrance on the woodman, either in quality or quantity of material. The man who wishes for a particular size, or shape, or kind of wood for a special purpose, such as the mortar of an oil-mill or the axle of a cart, may cut down twenty trees before he is suited, and no one prevents him. Nor (supposing there is no local rule against it) will any one prevent him cutting down half an acre of forest *à blanc étoc* for fuel if he so wishes it. The system is a revenue one, not a sylvicultural one. Nevertheless, it sometimes finds advantageous application in India, notably in the Garhwal and Kumaun forests of the North-West Himalayas. On the part of the Forest Department, it is a mere matter of police. The forest is surrounded by a cordon of revenue and check chaukis. If the exporter can run the gauntlet of these, so much the worse for the Forest police. No one concerns himself with what goes on in the interior of the forest.

So much for the system: practically it is not so bad as it looks, for there always *are* local rules and restrictions; Forest officials *do* patrol the interior on fire-work, on road-making, on planting, and on looking after reserved kinds, &c.; and along the boundary of forests administered under the Kham Tahsil System there usually springs up a population of woodmen, who make their main livelihood from the forests. They have a little cultivation perhaps beyond the forest boundary, but they are the men who know the interior, and where the best bamboos and poles, or the finest timber, the best thatching grass, the most mohwa or chironji are to be found. They are those who are employed by the timber merchant of the plains, who is *not* a woodman, and who comes up with money in his hand, squats in a hut close to the forest chauki, gets a portion of the depôt allotted to him, advances money to the woodmen, and pays for the produce as it comes out, and when measured and assessed by the Forest Mohurrir. The advantages of the Kham Tahsil System are, however, more than counterbalanced by its disadvantages; and it has only temporary justification in such places in India where the capabilities of the forest are largely in excess of the demand.

81. The Commutation System finds application mainly in the Central Provinces, where enormous tracts of country are under forest, and where the population is excessively sparse and poor. Under it the population pay for all their simple requirements on an assessment made per house or plough, or on their income, or on the land-revenue they pay. Nothing could be simpler or more elementary than this.

YIELD.

Bengal.

82. The yield of the different descriptions of forests was as follows:—

	Timber.	Fuel.	Bamboos.	Minor produce.
	Cubic feet.		No.	Maunds.
Reserved Forests.				
By Government Agency ...	78,117	328,213	581,033	427
„ Permit-holders	5,067,051	11,035,383	4,862,388	3,120,915
Free grants	3,656	.....	.....	975
Total ...	5,148,824	11,363,596	5,444,321	3,122,317
Protected and District Forests.				
Free grants	.....	.....	900	.....
By Permit-holders	505,657	4,985,812	16,264,905	806,553
Grand Total in 1884-85 ...	5,654,481	16,349,408	21,710,126	3,928,870
„ „ „ 1883-84 ...	6,466,746	19,034,256	20,572,889	4,990,257
Increase or decrease in 1884-85 ...	—812,265	—2,684,848	1,137,237	—1,061,387

With regard to Reserved Forests only, the following table compares the outturn of 1884-85 and 1883-84 :—

Year.	Timber.	Fuel.	Bamboos.	Minor produce.	Outturn, in cubic feet, of Wood per square mile of Forests.
	Cubic feet.		No.	Maunds.	
1884-85	5,148,824	11,363,596	5,444,321	3,122,317	3,382
1883-84	5,756,023	13,558,769	4,657,330	3,289,960	4,167
Increase or decrease in 1884-85 ...	—607,199	—2,195,173	786,991	—167,643	785

The decreased yield is mainly due to the conditions of the trade in the Sundarbans. Recent changes introduced into the Permit System caused discontent among the traders, who, having large stocks in hand, are still holding out against the changes and are not taking out permits.

North-Western Provinces and Oudh.

83. The following table shows the number of trees felled during the year, according to the class of fellings :—

Circle.	Selection fellings.	Thinnings.	Clearings.	Total.
Central	29,238	9,210	675	39,123
Oudh	12,357	169,122	2,215,554	2,397,033
School	14,099	21,112	1,735	36,946
Total in 1884-85 ...	55,694	199,444	2,217,964	2,473,102
„ 1883-84 ...	117,125	257,127	1,102,729	1,476,981
Increase in 1884-85 ...	...	...	1,115,235	996,121
Decrease in 1884-85 ...	61,431	57,683	...	...

The trees were felled by the following agency :—

Circle.	By Departmental Agency.	By Purchasers.	By Villagers (Free Grants).	Total.
Central	4,128	25,330	9,665	39,123
Oudh	182,052	719,213	1,495,768	2,397,033
School	14,030	16,928	5,988	36,946
Total in 1884-85 ...	200,210	761,471	1,511,421	2,473,102
„ 1883-84 ...	314,270	229,111	933,600	1,476,981
Increase in 1884-85 ...	...	532,360	577,821	996,121
Decrease in 1884-85 ...	114,060	...	...	...

According to species, the following trees were felled by departmental agency :—

Circle.	Sal.	Asna.	Sissu.	Deodar.	Other Conifers.	Oak.	Miscellaneous.	Total.
Central	...	...	...	...	1,628	232	2,268	4,128
Oudh	18,637	2,288	1	...	...	...	161,126	182,052
School	9,688	...	...	929	759	2,246	408	14,030
Total ...	28,325	2,288	1	929	2,387	2,478	163,802	200,210

The fellings of the year yielded, according to the statements submitted, the following material :—

Circle.	Yield, in Cubic Feet.				
	By Departmental Agency.	By Purchasers.	By Villagers (Free Grants).	Total.	Per acre of Forest Area.
Central	75,385	285,572	111,638	472,595	·44
Oudh	768,621	1,719,219	1,396,250	3,884,090	5·01
School	282,035	817,209	466,030	1,565,274	3·20
Total in 1884-85 ...	1,126,041	2,822,000	1,973,918	5,921,959	2·53
„ 1883-84 ...	2,168,801	978,859	1,910,734	5,058,394	2·20
Increase in 1884-85 ...	...	1,843,141	63,184	863,565	·33
Decrease in 1884-85 ...	1,042,760	...	...	...	...

Selection fellings.

Circle.	By Government Agency.		By Contractors.		By Villagers.		Total.	
	No.	C. ft.	No.	C. ft.	No.	C. ft.	No.	C. ft
Central ...	3,437	72,863	16,136	274,319	9,665	111,638	29,238	458,820
Oudh ...	10,543	501,549	1,814	66,700	...	...	12,357	568,249
School ...	2,298	229,358	5,813	713,383	5,988	466,030	14,099	1,408,771
Total ...	16,278	803,770	23,763	1,054,402	15,653	577,668	55,694	2,435,840

Thinnings.

Central ...	16	35	9,194	11,253	...	...	9,210	11,288
Oudh ...	169,122	263,055	...	...	...	...	169,122	263,055
School ...	9,907	43,677	11,185	103,826	...	...	21,112	147,503
Total ...	179,135	306,767	20,309	115,079	...	...	199,444	421,846

Clearances.

Circle.	By Government Agency.		By Contractors.		By Villagers.		Total.	
	No.	C. ft.	No.	C. ft.	No.	C. ft.	No.	C. ft.
Central ...	675	2,487	...	...	...	...	675	2,487
Oudh ...	2,387	4,017	717,399	1,652,519	1,495,768	1,396,250	2,215,554	3,052,786
School ...	1,735	9,000	...	...	...	...	1,735	9,000
Total ...	4,797	15,504	717,399	1,652,519	1,495,768	1,396,250	2,217,964	3,064,273

Assuming that, in the returns for selection fellings, the trees felled by contractors and villagers have been selected by the Forest Department, the average yield of a tree in the Central Circle is 15 cubic feet, that of a tree in the Oudh Circle 46 cubic feet, and in the School Circle 100 cubic feet. And assuming that the trees felled by villagers were for themselves, then some 30 per cent. of the trees and 23 per cent. of the yield in cubic feet were given in free grants to villagers. As by "selection fellings" is understood the felling of "mature trees," it is obvious that mature trees vary very much in the three Circles; and in future some different classification may have to be adopted, for a mature tree of only 15 cubic feet of contents ought not to come in the same category with a mature tree yielding 100 cubic feet.

Of other produce cut and collected by Government agency, the following are the principal :—

Circle.	Firewood.	Charcoal.	Bamboos.
	Maunds.	Maunds.	No.
Central	87,089	1,298	689,797
Oudh	64,022	50	...
School	51,957	...	...
Total ...	203,968	1,348	689,797

Punjab.

84. The produce removed from the Government Forests and the Agencies by which removed are shown as follows :—

Description of Produce.	1883-84.	1884-85. By Government Agency.	By Purchasers.	Free grants.	Total.	More.	Less.
Trees and poles cut, No. ...	67,088	4,617	25,787	82,755	113,159	46,071	...
Firewood, cubic feet stacked ...	7,616,238	2,111,460	6,742,641	...	8,854,101	1,237,863	...
„ maunds	71,962	1,185	...	...	1,185	...	70,777
„ pieces	94	1,769	...	...	1,769	1,675	...
„ loads	82,060	...	...	...	...	...	82,060
Charcoal, maunds	4,550	9,845	...	...	9,845	5,295	...
Bamboos, pieces	699,381	628,207	17,335	...	645,542	...	53,839
Coal, tons	317	...	...	...	...	...	317
Stone, cubic feet	21,350	...	25,450	...	25,450	4,100	...
Grass, maunds	4,608	...	2,945	...	2,945	...	1,663
„ loads	76,538	2	31,182	...	31,184	...	45,354

The falling off of the receipts in depôt is attributed to a bad floating year, but the value of local sales continues to improve.

The loss to the Government revenue on the forest produce given free to landholders and villagers is estimated at Rs. 62,000.

Central Provinces.

85. The number of trees felled by direct Government Agency was 19,432, as against 43,992 in the previous year. Of these, 729 in Mandla and 5,124 (poles for pit props) in Chanda were all that were cut for the direct object of producing revenue. The remainder were in the form of improvement cuttings, removal of hollow and injured trees, &c.

The total yield of the forests, as gathered and removed departmentally and by purchasers, is thus shown, the quantities being reduced to tons :—

Description of Produce.	By Departmental Agency.				By Purchasers.				Total.			
	Cubic feet.	Maunds.	No.	Reduced to Tons.	Cubic feet.	Maunds.	No.	Reduced to Tons.	Cubic feet.	Maunds.	No.	Reduced to Tons.
Teak and Sál wood	57,545	...	...	1,151	80,111	...	...	1,602	137,656	...	...	2,753
Other Woods	8,027	...	...	160·5	1,294,206	...	...	25,884	1,302,233	...	...	26,045
Firewood and Charcoal ...	...	21,165	...	756	...	19,53,214	...	69,758	...	1,074,379	...	70,513·5
Bamboos and articles made of Bamboos.	...	...	375,187	536	...	127,191	9,127,321	17,581·5	...	127,191	9,502,518	18,117·5
Grass, pulas	...	...	1,750,973	417	...	...	72,095,767	17,166	...	...	73,846,740	17,582·5
Hides and Horns	...	15	...	0·5	...	1,302	...	46·5	1,317	...	...	47
Other minor products ...	...	3,312	...	118	...	221,096	...	7,896	...	224,408	...	8,014·5
Mineral products	...	...	...	...	195,050	...	...	...	195,050	...	...	...
Total ...	...	...	...	3,139	...	...	...	130,934	...	...	...	143,073

The amount of forest produce consumed by forest villagers who are allowed to commute is again not forthcoming. This is to be regretted. (The Conservator's desire to show the yield of individual forests is a most laudable one, and may be expected when his Office establishments are increased.)

According to the figures given, the respective yield of the 1st and 2nd class Reserves per square mile was as follows :—

Class of Forests.	Total.			Per square mile.		
	Timber, Fuel, and Bamboos.	Other Produce.	Total.	Timber, Fuel, and Bamboos.	Other Produce.	Total.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1st class Reserves	32,418	11,435	43,853	10	3	13
2nd ditto	85,010	14,210	99,220	5	1	6
Total ...	117,428	25,645	143,073	6	1	7

This shows a falling off in the receipts from the 2nd class Reserves, and an increase from the 1st class Reserves. The average of 13 tons per square mile in the latter has been maintained, notwithstanding the increase in area of 70 square miles.

British Burma.

86. The following table exhibits the girdling operations of the year under review, as compared with those of the previous year:—

Circle.	Teak.			Other Trees.
	Inside Reserves.	Outside Reserves.	Total.	
Pegu	1,731	13,715	15,446	2,885
Tenasserim	2,054	646	2,700	3,124
Total in 1884-85 ...	3,785	14,361	18,146	6,009
„ 1883-84 ...	6,700	9,605	16,305	4,808
Increase or decrease in 1884-85 ...	—2,915	4,756	1,841	1,201

For Pegu, the forecast of 1880 gave 15,000 as the number of trees to be annually girdled. The excess of 446 trees is to be accounted for by the Working-Plan for the Thônzè Reserve giving an annual possibility of 1,000 trees, against 300 in the forecast, and by the number of trees to be girdled outside the Reserves having been largely underestimated. For Tenasserim the forecast allowed 1,000 trees per annum. The increase over the forecast of 1,700 trees is also to be accounted for by the short estimate of the trees outside Reserves, and in 1883-84 no trees at all were girdled inside Reserves.

The yield of the forests, as summarised under the different main heads of working, was as follows :—

	Teak.	Other kinds.	Total.
	Tons.	Tons.	Tons.
By Government Agency	44,149	9,993	54,142
By Purchasers and under Trade-permits ...	406	73,866	74,332
Under Free-permits	712	843	1,555
By Lease-holders	2,681	80	2,761
Total in 1884-85 ...	48,008	84,782	132,790
„ 1883-84 ...	40,448	73,409	113,857
Increase in 1884-85 ...	7,560	11,373	18,933

The increase in the outturn of teak almost counterbalances the falling off of last year.

The imports of foreign timber into British Burma were :—

In 1884-85—85,502 logs in Pegu, and 158,103 tons in Tenasserim.
In 1883-84—47,535 „ „ „ 149,400 „ „

Assessing the Pegu logs at 40 cubic feet per log, the imports amounted to 226,504 tons of timber, against only 147,977 tons exported, leaving the produce of the British Burma forests out of the question (132,790 tons).

Assam.

87. The following table exhibits the outturn of the Government Forests in Assam proper :—

Class of Forests.	Number of Trees.			Total.		Poles, Boats, Dead Wood, &c.	Grand Total.
	Sál.	Other valuable Trees reserved in Protected and District Forests.	Miscellaneous Trees.	No.	Cubic contents.		
						C. ft.	C. ft.
From Reserved Forests ..	2,676	490	1,498	4,664	138,120	92,675	230,995
,, Protected and District Forests ...	897	1,779	3,083	5,759	172,770	108,475	281,245
Total in 1884-85 ...	3,573	2,229	4,551	10,363	310,900	201,350	512,240
,, in 1883-84 ...	5,892	3,003	2,464	11,440	343,470	321,515	664,985
Increase or decrease in 1884-85 ...	−2,319	−854	2,087	−1,086	−32,560	−120,165	−152,745

The decrease, although not so marked as in 1883-84, has continued.

The yield of the Government Forests in the Cachar and Sylhet Districts, as compared with that of the previous year, is shown as follows :—

Year.	Logs.	Posts and Planks.	Firewood.	Total.
	C. ft.	C. ft.	C. ft.	C. ft.
1884-85	254,559	2,491	9,710	266,760
1883-84	221,425	92	6,828	228,345
Increase in 1884-85 ...	33,134	2,399	2,882	38,415

The Rubber Mahals brought in Rs. 20,660, as against Rs. 36,700 last year.

The imports into Assam of rubber are estimated at 802 maunds, against 1,642 maunds last year; and the exports at 8,092 maunds, against 10,244 maunds. The local yield was therefore 1,312 maunds less than last year.

The loss to Government on 6,632 trees given free of royalty to the Assam Railways and Trading Company is estimated at Rs. 25,948.

Coorg.

88. The number of trees felled by Government agency, as compared with that of the two previous years, is as follows :—

Year.	Teak.	Other Trees.	Total.
1884-85	658	843	1,501
1883-84	817	969	1,786
1882-83	494	1,186	1,680

The yield of the forests seems to have been as follows during the year under review :—

(*a*) In Reserved Forests :—

	Teak.	Other Trees.	Teak Poles.	Other Poles.	Bamboos.
	C. ft.	C. ft.	No.	No.	No.
By Government agency ...	28,116	26,779	198	1,505	115,934
By Purchasers	No. 3	No. 452	...	6	184,676
By Free grants	...	...	...	...	...
Total ...	...	...	198	1,511	300,610

(*b*) In Unreserved Forests :—

	Teak.	Other Trees.	Teak Poles.	Other Poles.	Bamboos.
	No.	No.	No.	No.	No.
By Government agency ...	...	...	...	...	...
By Purchasers	11	51	...	...	...
By Free grants	...	139	...	616	7,880
Total ...	11	190	...	616	7,880

(*c*) On alienated land—351 trees.

The sandalwood operations of the last five years have been as follows :—

Year.	Amount brought to Depôt.	Sold during the Year.		
		No. of Tons.	Amount realised.	
			Total.	Per Ton
	Tons.		Rs.	Rs.
1880-81	118¼	112½	34,324	305
1881-82	126¾	60¾	14,030	231
1882-83	117¼	192½	77,407	403
1883-84	71½	36½	10,908	301
1884-85	72¼	118¾	35,651	300

Although the amount sold in 1884-85 was three times that disposed of in 1883-84, yet the price has been maintained. The stock in hand, however, has been reduced from 107 to 60½ tons. The work will, in future, be done departmentally, the past year's operations having shown this method to be more satisfactory.

CHAPTER V.

Financial Results.

General.

89. The Receipts and Surplus of the various provinces during the year under review, arranged according to the total amount of Revenue, are as follows:—

No.	Provinces.	Revenue.	Surplus.	Deficit.	Proportion of Surplus to Gross Revenue, in per cent.
		Rs.	Rs.	Rs.	
1	Bombay	27,74,780	10,57,871	...	38
2	British Burma	16,70,980	4,58,748	...	27
3	North-Western Provinces and Oudh ...	15,72,319	5,52,217	...	35
4	Madras	11,62,689	2,49,503	...	21
5	Central Provinces	10,27,202	5,31,381	...	52
6	Punjab	7,49,352	1,91,282	...	22
7	Bengal	5,71,152	1,59,237	...	28
8	Berar	2,93,448	1,40,934	...	48
9	Assam	1,80,413	...	17,287	...
10	Coorg	1,13,233	36,282	...	32
11	Andamans	22,213	...	547	...
12	Ajmere	10,456	...	5,860	...
13	Baluchistan	6,089	...	7,177	...
14	Imperial	4,594	...	42,221	...
15	Forest Surveys (Berar)	934	...	33,870	...
16	Forest Surveys (Imperial)	234	...	19,589	...
17	Forest School	73	...	22,495	...
	Total ...	1,01,60,161	32,28,409	...	32

Burma, which had for so many years headed the list, has now, for the first time, to yield the first place to Bombay, which now stands first both in gross Revenue and in Surplus. The total Forest Revenue has fallen from 108 to 101½ lakhs, and the Surplus Revenue from 41½ to 32¼ lakhs.

90. The Surplus Revenue for the last five years is shown in the following table:—

Year.	British territory.				Berar.	Grand Total.
	Bengal Presidency.	Madras.	Bombay.	Total.		
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1880-81	18,07,005	2,17,610	3,55,460	23,80,075	1,37,588	25,17,663
1881-82	23,04,184	2,03,489	6,58,936	31,66,609	80,526	32,47,135
1882-83	26,42,642	2,61,000	8,11,583	37,15,815	1,36,960	38,52,275
1883-84	29,05,697	1,66,971	9,38,028	40,11,596	1,36,635	41,48,231
1884-85	18,13,971	2,49,503	10,57,871	31,21,345	1,07,064	32,28,409

Bengal.

91. The financial results, as compared with those of the previous year, were as follow:—

Year.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1884-85	5,71,152	4,11,915	1,59,237
1883-84	6,94,334	3,87,813	3,06,521
Increase or decrease in 1884-85	—1,23,182	24,102	—1,47,284

The falling off in the Receipts, although considerable, is reported to be of a temporary nature only, and the total Revenue of Rs. 5,71,152 is still in excess of the average of the last 8 years (Rs. 5,56,554).

The distribution of the Receipts and Surplus among the different classes of forests is as follows:—

Class of Forests.	Receipts.	Surplus.	Area of Forests.	Revenue per square mile.		
				Gross.	Net.	
					1884-85.	1883-84.
	Rs.	Rs.	Sq. Ms.	Rs.	Rs.	Rs.
Reserved Forests	4,41,692	79,434	4,882	90	16	46
Protected „	31,518	3,704	2,298	14	2	5
District „	97,942	76,099	4,313	23	18	10
Total ...	5,71,152	1,59,237	11,493	50	14	27

The Surplus from Reserved Forests continues to decrease, being per square mile Rs. 58 in 1882-83, Rs. 46 in 1883-84, and now only Rs. 16 in 1884-85.

North-Western Provinces and Oudh.

92. The financial results of the year were as follow:—

Circle.	Receipts.	Charges.	Surplus, 1884-85.	Surplus or Deficit, 1883-84.
	Rs.	Rs.	Rs.	Rs.
Central	4,92,497	2,61,912	2,30,585	2,68,388
Oudh	7,77,021	5,50,758	2,26,263	3,16,323
School	3,02,801	2,07,432	95,369	—15,213
Total in 1884-85 ...	15,72,319	10,20,102	5,52,217	...
„ „ 1883-84 ...	16,11,383	10,41,885	5,69,498	...
Decrease in 1884-85 ...	39,064	21,783	17,281	

The School Circle has now for the first time, since 1880-81, returned a Surplus. During the last eight years the total Receipts have been Rs. 21,35,983, and the total Charges Rs. 21,25,191. This favourable result seems to have

been due to the abandonment of the system of employing contractors for the floating operations on the Jumna, and the adoption of departmental floating in its stead.

Punjab.

93. The financial results compare with those of the previous year as follow :—

Year.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1884-85	7,19,352	5,58,070	1,91,282
1883-84	9,10,177	6,53,146	2,57,031
Decrease in 1884-85	1,60,825	95,076	65,749

The decrease in Revenue was due to the year having been a bad floating one, resulting in diminished receipts in depôt and smaller sales; while the expenses were increased by 1½ miles of tramway, and the payment of two years' water-rate for the Changa Manga Plantation.

Central Provinces.

94. The financial results were as follow :—

Class of Forests.	Receipts.	Charges.	Surplus.	
			Total.	Per square mile.
	Rs.	Rs.	Rs.	Rs.
1st class Reserves	2,20,487	2,37,482	*Def.* 16,995	*Def.* 5
2nd ditto	8,06,715	2,58,339	5,48,376	34
Total in 1884-85 ...	10,27,202	4,95,821	5,31,381	27
Ditto 1883-84 ...	9,94,769	4,36,058	5,58,711	29
Increase or decrease in 1884-85 ...	32,433	59,763	—27,330	—2

The diminution in the Surplus is due to the unusual charge of Rs. 60,000 for the purchase of the valuable Ahiri Forest (extension). The average Surplus of the last eight years from 1877-78 to 1884-85 has been Rs. 4,95,440.

British Burma.

95. There has been a great falling off of the Receipts, due to the fall in the price of teak. The Receipts and Charges are thus shown :—

Circle.	Receipts.	Charges.	Surplus.	Proportion of Surplus to Receipts, in per cent.
	Rs.	Rs.	Rs.	
Pegu	12,71,328	9,04,119	3,67,209	29
Tenasserim	3,99,653	3,08,114	91,539	23
Total in 1884-85 ...	16,70,981	12,12,233	4,58,748	27
„ 1883-84 ...	25,09,275	12,17,824	12,91,451	51
Decrease in 1884-85 ...	8,38,294	5,591	8,32,703	24

Assam.

96. The financial results were as follow, compared with those of the previous year :—

Year.	Receipts.	Charges.	Surplus or Deficit.
	Rs.	Rs.	Rs.
1884-85	1,80,113	1,97,699	—17,286
1883-84	2,11,445	1,99,562	11,883
Decrease in 1884-85 ...	31,032	1,863	29,169

The financial results compare unfavourably with those of the previous year, as shown above. This is due to the dullness of the export trade with Bengal—the only lucrative portion of the working of the Assam forests just at present.

Coorg.

97. The financial results, compared with those of 1883-84, were as follow :—

Year.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1884-85	1,13,233	76,952	36,281
1883-84	87,822	75,023	12,799
Increase in 1884-85 ...	25,411	1,929	23,482

Ajmere.

98. The financial results of the year under review, compared with those of the previous year, were as follow :—

Year.	Receipts.	Charges.	Deficit.
	Rs.	Rs.	Rs.
1884-85	10,456	16,315	5,859
1883-84	8,198	14,574	6,376
Increase or decrease in 1884-85	2,258	1,741	—517

Berar.

99. The financial results of the year's working were as follow:—

Class of Forests.	Receipts.	Charges.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
State Reserves	47,271	63,793	...	16,522
District „	55,596	26,934	28,662	...
Unreserved Forests	1,90,581	61,787	1,28,794	...
Total in 1884-85 ...	2,93,448	1,52,514	1,40,934	...
1883-84 ...	3,08,217	1,56,539	1,51,678	...
Decrease in 1884-85 ...	14,769	4,025	10,744	...

There has been a falling off since last year, but the results of the last eight years' working still show very well, being total Receipts Rs. 22,61,481, total Charges Rs. 10,66,808, total Surplus Rs. 11,94,697.

Baluchistan.

100. The following table shows the financial results of forest operations since their commencement in 1880-81:—

Year.	Receipts.	Charges.	Surplus.	Deficits.
	Rs.	Rs.	Rs.	Rs.
1880-81	14,376	16,416	...	2,040
1881-82	18,616	17,682	934	...
1882-83	5,039	11,962	...	6,923
1883-84	4,752	16,911	...	12,159
1884-85	6,089	13,266	...	7,177
Total ...	48,872	76,337	...	27,365

Madras.

101. The general financial results of the year, as taken from the "Actuals" in the Madras Forest Budget Estimate for 1886-87, are:—

Circle.	Receipts.	Charges.	Surplus.	Proportion of Surplus to Receipts, in per cent.
	Rs.	Rs.	Rs.	
Northern	5,37,197	3,98,566	1,38,631	26
Southern	6,25,492	5,14,620	1,10,872	18
Total in 1884-85	11,62,689	9,13,186	2,49,503	21
Total in 1883-84 ...	9,53,704	7,86,733	1,66,971	18
Increase in 1884-85 ...	2,08,985	1,26,453	82,532	3

Bombay.

102. The financial results are summarized as follow :—

Circle.	Receipts.	Charges.	Surplus.	Proportion of Surplus to Receipts, in per cent.
	Rs.	Rs.	Rs.	
Northern	10,08,725	6,90,088	3,18,687	32
Southern	12,89,562	6,64,378	6,25,184	48
Sind	4,76,493	3,62,443	1,14,050	24
Total in 1884-85 ...	27,74,780	17,16,909	10,57,871	38
„ in 1883-84 ...	25,03,100	15,64,172	9,38,928	38
Increase in 1884-85 ...	2,71,680	1,52,737	1,18,943	...

Exports of Forest Produce.

103. The following table shows the quantities of Forest Produce exported from India during the year :—

Articles.	Quantity, in tons of 20 cwt.; in the case of Teak, 50 cubic feet.		Valuation at port of shipment in 1884-85.	
	Average of 5 years, 1879-80 to 1883-84.	In 1884-85.	Total.	Per ton.
			Rs.	Rs.
Caoutchouc	518	406	7,73,289	1,905
Shell lac	3,930	5,337	45,36,326	850
Lac-dye	300	5	1,274	255
Cardamoms	90	24	6,57,112	27,380
Sandalwood, ebony, and other ornamental woods.	.....	(not known)	2,70,341	(not known)
Cutch and Gambier ...	12,906	12,308	28,21,085	229
Myrobalams	19,811	27,686	23,90,133	86
Teak	53,256	47,556	53,21,295	112
Total in 1884-85 ...	.....	...	1,67,70,855	...
„ 1883-84 ...	.....	...	1,74,29,723	...
Decrease in 1884-85 ...	.....	...	6,58,868	...

APPEN
STATE

Summary of the Revenue and Expenditure of the Forest

Budget Heads.	Bengal Presidency (British Territories).									
	Imperial.	Bengal.	North-Western Provinces and Oudh.	Punjab.	Central Provinces.	British Burma.	Assam.	Coorg.	Ajmere.	Baluchistan.
REVENUE.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
I.—Timber and other produce removed from the forests by Government Agency.	...	93,471	8,81,630	3,28,265	84,151	12,56,766	333	81,281	1,810	2,331
II.—Timber and other produce removed from the forests by consumers or purchasers.	...	4,45,071	6,54,746	3,59,675	9,07,879	2,78,821	1,71,891	27,096	8,034	3,507
III.—Drift and waif wood and confiscated forest produce.	...	2,435	10,961	36,796	5,258	79,483	1,208	454	...	3
IV.—Revenue from forests not managed by Government.	...	288	8,932	2,702	9,884	30,965	3,742	...	...	154
V.—Miscellaneous ...	...	29,887	16,050	21,914	20,030	24,945	3,239	4,402	612	94
Total Revenue ...	4,594	5,71,152	15,72,319	7,49,352	10,27,202	16,70,980	1,80,413	1,13,233	10,456	6,089
EXPENDITURE.										
A.—Conservancy and Works.										
I.—Timber and other produce removed from the forests by Government agency.	...	71,585	4,38,021	1,06,473	36,060	7,64,038	2,687	17,175	802	1,643
II.—Timber and other produce removed from the forests by consumers or purchasers.	...	27,239	42,066	2,103	1,71,031	7,560	6,071	...	96	35
III.—Drift and waif wood and confiscated forest produce.	...	847	4,244	9,696	...	45,471	68	...	...	...
IV.—Revenue from forests not managed by Government.	...	...	3,575	2,079	...	4,048	...	...	...	...
V.—Rent of leased forests, and payments to shareholders in forests managed by Government.	...	...	13,092	38,027	251	...	...	...	...	...
VI.—Live-stock, stores, tools and plant.	...	21,926	21,158	13,809	12,326	35,453	13,990	1,385	120	383
VII.—Communications and buildings.	...	37,280	1,01,092	10,809	5,882	17,331	24,067	1,712	972	192
VIII.—Demarcation, improvement, and extension of forests.	...	39,752	78,913	67,080	93,779	62,217	43,084	23,028	3,121	414
IX.—Miscellaneous ...	...	10,868	10,674	3,345	4,899	3,611	4,773	1,251	63	2
Total Conservancy and Works.		2,09,497	7,13,738	2,54,111	3,24,128	9,39,729	94,740	44,551	5,174	2,669
B.—Establishments.										
I.—Salaries	...	1,65,401	2,55,153	2,44,535	1,45,429	2,26,448	82,970	26,079	9,145	7,899
II.—Travelling allowances ...	...	27,162	35,990	42,368	13,409	35,088	16,295	5,515	1,434	2,477
III.—Contingencies ...	...	9,765	15,311	17,026	12,855	8,967	3,695	806	563	221
Total Establishments ...	...	2,03,418	3,06,364	3,03,950	1,71,693	2,72,503	1,02,960	32,400	11,142	10,597
Grand Total of Expenditure.	46,815	4,11,915	10,20,102	5,58,070	4,95,821	12,12,232	1,97,700	76,951	16,316	13,266
SURPLUS ...		1,59,237	5,52,217	1,91,282	5,31,381	4,58,748	...	36,282	...	...
DEFICIT ...	42,221	...	...	...	...	...	17,287	...	5,860	7,177

* The figures in this Statement have been revised by the Comptroller and Auditor General.

DICES.

MENT I.*

Department in India for the year 1884-85.

Andamans.	Forest School	Forest Surveys (Imperial).	Total Bengal Presidency (British Territories).	Madras.	Bombay.	Total British Provinces.	Berar.	Forest Surveys (Berar).	Grand Total.	Budget Heads.
Rs.	Rs.	Rs.	Rs.	Rs	Rs.	Rs.	Rs.	Rs.	Rs.	REVENUE.
...	...	...	27,30,038	3,79,185	17,30,785	48,40,008	...	...	48,40,008	I.—Timber and other produce removed from the forests by Government Agency.
...	...	...	28,56,720	7,47,973	9,39,670	45,44,363	2,90,389	...	48,34,752	II.—Timber and other produce removed from the forests by consumers or purchasers.
...	...	...	1,36,598	8,841	9,008	1,54,447	1,299	...	1.55,746	III.—Drift and waif wood and confiscated forest produce.
...	...	...	56,667	...	39,202	95,869	...	...	95,869	IV.—Revenue from forests not managed by Government.
...	73	234	1,21,480	26,690	56,115	2,04,285	1,760	934	2,06,979	V.—Miscellaneous.
22,213	73	234	59,28,310†	11,62,689	27,74,780	98,65,779	2,93,448	934	1,01,60,161	Total Revenue.
										EXPENDITURE.
										A.—Conservancy and Works.
...	...	...	14,38,487	1,21,056	7,39,296	22,98,839	...	...	22,98,839	I.—Timber and other produce removed from the forests by Government Agency.
...	...	...	2,56,209	44,850	61,529	3,62,579	437	...	3,63,016	II.—Timber and other produce removed from the forests by consumers or purchasers.
...	...	...	60,320	1,270	259	61,849	...	...	61,849	III.—Drift and waif wood and confiscated forest produce.
...	...	...	9,702	...	4,803	14,505	...	...	14,505	IV.—Revenue from forests not managed by Government.
...	...	...	51,370	13,600	21,024	85,994	17,120	...	1,03,114	V.—Rent of leased forests and payments to shareholders in forests managed by Government.
...	1,921	929	1,23,396	13,053	8,111	1,44,554	3,832	2,457	1,50,843	VI.—Live-stock, stores, tools and plant.
...	...	...	2,00,237	47,755	13,235	2,61,227	16,245	398	2,77,870	VII.—Communications and buildings.
...	...	2,110	4,14,098	1,47,378	2,94,250	8,55,726	8,599	5,018	8,69,343	VIII.—Demarcation, improvement, and extension of forests.
...	3,101	...	42,587	6,462	10,377	59,426	2,451	...	61,877	IX.—Miscellaneous.
	5,022	3,0[illegible]	25,96,398	3,95,424	11,52,877	41,44,699	48,684	7,875	42,01,258	Total Conservancy and Works.
										B.—Establishments.
...	15,196	14,880	11,95,223	3,83,533	4,20,304	19,99,067	80,888	18,758	20,98,713	I.—Salaries.
...	633	1,317	1,81,618	82,443	1,05,363	3,69,424	7,897	6,112	3,83,433	II.—Travelling allowances.
...	1,717	587	71,523	23,016	38,965	1,32,904	15,045	2,061	1,50,010	III.—Contingencies.
...	17,546	16,784	14,48,366	4,88,997	5,64,632	25,01,395	1,03,830	26,931	26,32,156	Total Establishments.
				8,84,421 ‡28,765						
22,760	22,568	19,823	+41,14,339	9,13,186	17,16,909	67,44,434	1,52,514	34,806	69,31,752	Grand Total of Expenditure.
...	...	...	18,13,971	2,49,503	10,57,871	31,21,345	1,40,934	...	32,28,400	SURPLUS.
547	2,495	19,589	...	...	...	...	...	33,870	...	DEFICIT.

† These totals include, respectively, Revenue and Expenditure under "Imperial," which cannot satisfactorily be allotted to any particular budget sub-head; also under "Andamans," the details of which are not known at present.

‡ Unadjusted Advances.

STATEMENT II.

Financial Results of Forest Administration for the year 1884-85.

Province.	Timber and other produce removed from the Forests by Government Agency.			Other Revenue.			Formation, Protection, and Improvement of Forests.
	Receipts.	Charges.	Surplus or Deficit.	Receipts.	Charges.	Surplus or Deficit.	Charges.
	Rs.	Rs.	Rs	Rs.	Rs.	Rs.	Rs.
Bengal	95,201	97,700	—2,499	4,75,951	1,25,406	3,50,545	1,88,809
North-Western Provinces and Oudh.	7,31,079	5,16,062	2,15,017	6,90,273	2,08,699	4,81,574	2,65,563
Punjab	3,65,017	2,62,461	1,02,586	3,84,305	1,12,322	2,71,983	1,83,287
Central Provinces	84,102	51,237	32,865	9,43,101	2,47,728	6,95,373	1,96,856
British Burma	12,95,778	9,01,341	3,94,437	3,75,203	1,49,183	2,26,020	1,61,709
Assam	1,540	2,756	—1,216	1,78,873	65,822	1,13,051	1,29,122
Coorg	81,281	29,540	51,741	31,952	6,866	25,086	40,546
Ajmere	1,810	802	1,008	8,646	4,616	4,030	10,898
Baluchistan	2,334	5,303	—2,969	3,753	3,697	56	4,266
Total ...	26,58,172	18,67,202	7,90,970	30,92,057	9,24,339	21,67,718	11,82,056
Berar	...	...	...	2,93,448	1,00,756	1,92,692	51,758
Total Bengal Presidency ...	26,58,172	18,67,202	7,90,970	33,85,505	10,25,095	23,60,410	12,33,814
Madras	3,85,391	2,68,752	1,16,639	7,77,298	3,14,951	4,62,347	3,00,718
Bombay	17,30,785	9,87,132	7,43,653	10,43,994	1,91,705	8,52,289	5,38,071
Grand Total ...	47,74,348	31,23,086	16,51,262	52,06,797	15,31,751	36,75,046	20,72,603

* The figures in this Statement are taken from Form No. 57 appended to the Annual Forest Reports.

STATEMENT III.*

Revenue, Expenditure, and Surplus of the Forest Department throughout India during the 21 years from 1864-65 to 1884-85.

REVENUE.

Provinces.	1864-65.	1865-66.	1866-67.	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.	1884-85.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Imperial†	421	30,959	752	543	1,159	1,436	3,107	2,334	2,771	1,225	1,144	1,465	2,490	1,36,773	16,716	17,214	18,887	27,497	30,732	32,907	4,594
Bengal	19,760	38,658	45,590	56,039	70,715	2,44,657	1,03,249	1,44,719	1,49,852	1,79,366	1,85,932	1,98,274	2,22,491	4,26,228	4,16,027	4,49,524	5,61,340	6,33,734	6,93,959	6,94,334	5,71,152
North-Western Provinces and Oudh.	7,23,440	7,31,382	7,79,201	5,84,503	7,85,210	8,32,945	4,24,257	11,70,999	19,39,115	19,32,677	13,63,358	12,64,356	11,50,671	12,53,108	11,26,755	10,39,966	9,42,228	10,66,094	10,13,403	16,11,383	15,72,319
Punjab	5,27,081	3,50,680	3,96,050	2,80,510	3,44,882	3,94,129	9,47,236	7,10,216	6,55,995	7,32,539	8,34,874	9,09,831	5,98,754	6,83,711	5,00,619	6,49,819	6,71,678	6,88,308	7,66,709	9,10,177	7,49,352
Central Provinces	68,760	1,34,042	2,37,472	3,49,490	3,50,536	4,16,020	6,58,120	5,57,128	4,81,673	5,68,367	6,60,938	7,26,176	6,61,326	6,83,916	8,52,862	10,06,724	8,50,139	11,72,884	9,77,647	9,94,769	10,27,202
British Burma	9,34,070	8,98,485	4,24,774	6,46,812	8,17,599	9,84,774	8,18,124	7,72,400	8,27,569	10,68,621	10,74,802	17,79,020	15,51,408	16,03,082	11,37,562	11,80,190	15,16,613	22,31,804	25,03,886	25,09,275	16,70,980
Assam	...	...	...	...	...	...	...	...	...	...	65,949	61,870	81,568	1,34,326	1,61,779	1,64,335	1,68,997	1,66,054	2,48,605	2,11,445	1,80,413
Coorg	57,488	1,01,157	32,508	79,082	98,496	1,08,135	72,144	92,466	84,425	1,10,284	58,015	1,07,960	75,927	1,01,614	52,020	1,01,786	87,857	1,00,364	1,38,022	87,822	1,13,233
Ajmere	...	...	...	...	...	...	...	...	24	304	202	410	905	3,002	1,241	1,861	1,124	4,065	7,126	8,198	10,456
Forest Surveys (Imperial) ...	...	...	...	...	...	...	...	...	...	...	...	21	...	...	63	38	272	...	348	36	234
Forest School	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	73
Andamans	2,898	2,515	3,495	6,070	5,071	3,036	7,373	5,889	6,862	4,184	5,516	5,363	4,679	1,301	5,564	2,437	27,734	48,467	70,858	21,762	22,213
Total ...	23,33,828	22,37,878	19,19,842	20,09,049	24,73,663	29,85,132	30,33,610	34,56,043	41,45,286	45,97,567	42,50,730	50,54,246	43,50,129	49,76,455	42,71,208	46,13,894	48,46,869	61,29,121	64,51,305	70,85,108	59,22,221
Madras	4,49,770	4,76,674	4,48,130	5,81,312	5,29,185	6,97,699	5,33,412	5,76,261	5,95,188	6,13,653	5,14,491	6,77,873	5,92,573	5,50,310	6,06,788	6,26,168	7,36,880	8,66,998	9,06,442	9,53,791	11,62,689
Bombay	10,81,997	10,07,611	8,21,308	8,84,244	12,13,483	12,35,257	11,68,401	11,50,215	11,46,405	11,88,089	12,24,951	12,48,672	12,26,658	12,61,528	11,81,894	15,24,712	15,22,897	18,28,117	20,90,353	25,03,100	27,74,780
Total (British India) ...	38,65,595	37,72,163	31,89,220	34,68,635	42,16,336	49,18,088	47,35,423	51,82,519	58,86,879	63,99,309	59,89,182	69,80,791	61,69,360	67,88,293	60,59,890	67,64,774	71,06,556	87,74,136	94,48,100	1,05,41,912	98,59,690
Berar	2,308	15,106	43,574	53,449	84,557	1,80,397	1,77,329	1,55,543	2,56,563	2,63,256	2,60,678	2,32,782	2,53,072	2,79,236	2,88,704	3,07,500	2,66,556	2,33,511	2,92,014	3,08,217	2,93,448
Forest Surveys (Berar) ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	934
Baluchistan	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	14,376	18,616	5,039	4,752	6,089
GRAND TOTAL ...	38,67,873	37,87,269	32,32,794	35,22,075	43,00,893	50,98,485	49,12,752	53,38,062	61,43,442	66,62,565	62,49,856	72,13,573	64,22,432	70,67,529	63,48,594	70,72,274	73,87,488	90,26,273	97,45,153	1,08,54,881	1,01,60,161

* The figures in this Statement have been revised by the Comptroller and Auditor General.
† Includes certain House Receipts, and undistributable and petty local items.

STATEMENT III—*continued.*

EXPENDITURE.

Provinces.	1864-65.	1865-66.	1866-67.	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.	1884-85.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Imperial*	41,307	16,941	32,078	38,024	33,007	54,186	51,423	68,530	67,150	79,216	81,210	48,239	44,704	98,099	63,956	73,810	65,291	77,635	87,263	98,266	46,815
Bengal	3,971	45,292	1,05,215	1,67,495	1,15,933	1,17,899	86,179	1,10,999	1,00,777	1,39,274	1,01,361	1,42,676	2,14,197	2,62,913	3,38,075	2,75,748	3,35,381	3,94,612	3,82,183	3,87,813	4,11,915
North-Western Provinces and Oudh.	5,03,580	3,31,261	4,10,215	3,89,806	5,01,021	5,29,422	8,10,073	11,10,071	11,74,666	11,90,794	10,61,302	7,36,979	6,61,362	7,28,9 6	8,09,977	7,16,594	6,79,574	9,16,212	8,39,025	10,41,885	10,20,103
Punjab	5,78,616	2,71,369	2,63,373	2,88,029	3,17,631	7,41,152	11,95,655	7,07,619	8,90,369	6,11,556	6,58,983	5,56,911	5,25,659	5,20,631	5,23,551	4,80,676	4,95,368	5,16,269	5,20,750	6,53,146	5,58,070
Central Provinces	1,55,270	1,08,597	1,19,108	2,18,434	3,10,126	4,74,930	3,17,928	2,31,633	2,50,578	2,95,939	2,91,449	3,73,327	2,90,205	3,22,034	3,93,759	5,22,574	4,95,512	4,97,013	4,12,247	4,36,059	4,95,821
British Burma	2,62,939	3,11,941	2,86,903	3,30,526	4,24,333	4,22,106	4,00,851	3,79,217	3,36,759	4,75,304	6,62,517	8,15,659	10,05,554	8,58,231	7,15,402	7,83,490	7,12,568	11,50,224	12,28,955	12,17,824	12,12,232
Assam	...	...	...	...	...	...	...	...	...	...	60,367	63,397	90,520	1,01,153	1,26,024	1,32,529	1,42,735	1,65,361	1,71,823	1,99,562	1,97,700
Coorg	3,467	12,906	8,650	13,722	17,948	33,064	24,747	70,178	29,179	45,952	37,999	40,168	33,792	36,208	34,829	55,165	56,487	59,796	64,770	75,923	76,951
Ajmere	...	...	...	...	...	...	...	...	13,051	17,032	15,281	27,316	22,160	14,926	13,445	13,750	12,423	13,954	11,284	14,574	16,316
Forest Surveys (Imperial) ...	...	...	...	...	...	...	...	...	...	59,556	78,090	59,920	58,920	60,165	60,325	46,378	40,335	42,489	41,395	30,940	19,823
Forest School	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	22,508
Andamans	...	...	...	...	...	150	...	1,651	1,896	...	...	...	1,307	1,096	...	7,177	2,160	2,306	1,940	12,161	22,709
Total ...	15,51,681	10,98,437	12,55,022	14,46,036	17,28,902	23,73,109	28,57,156	26,79,893	28,64,728	29,05,523	30,52,589	28,63,632	31,18,279	30,04,442	30,32,949	30,72,601	30,37,824	38,35,571	39,01,740	41,67,252	40,78,313
Madras	2,64,780	3,51,392	3,12,527	4,02,674	4,01,617	4,21,516	4,47,267	3,91,921	5,18,746	4,74,920	5,95,941	5,92,039	6,35,560	5,96,621	4,95,914	5,48,527	5,19,270	6,03,419	6,45,352	7,66,733	9,13,186
Bombay	3,72,187	7,77,139	6,51,641	5,55,039	6,31,226	5,56,086	6,39,759	5,97,631	7,25,031	7,21,594	8,36,675	7,94,141	8,38,079	8,77,716	10,01,923	10,76,989	11,67,317	11,69,181	12,78,770	15,64,172	17,16,999
Total (British India) ...	21,88,948	22,26,968	22,50,393	24,01,649	27,61,745	33,50,440	39,74,182	36,67,640	41,38,505	41,02,037	44,85,205	42,19,812	46,22,818	44,47,782	45,83,786	46,98,207	47,24,141	56,63,471	57,25,862	65,15,157	67,07,403
Berar	478	8,901	13,718	18,089	34,105	81,569	81,972	1,00,929	83,631	87,350	91,389	91,499	94,652	1,09,968	1,07,350	1,10,506	1,28,908	1,52,955	1,55,054	1,56,539	1,52 514
Forest Surveys (Berar) ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	15,013	84,904
Baluchistan	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	16,416	17,682	11,962	16,911	13,266
GRAND TOTAL ...	21,89,426	22,35,959	22,64,108	24,23,318	27,95,950	34,32,009	40,56,154	37,68,469	42,22,136	41,88,387	45,76,594	43,11,311	47,17,170	45,57,750	46,91,136	48,08,713	48 69,825	57,79,138	58,92,878	67,06,650	69,31,752

* Includes pay of Inspector General of Forests, certain Home Charges, and undistributable and petty local items.

STATEMENT III—*concluded.*

SURPLUS.

Provinces.	1864-65.	1865-66.	1866-67.	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.	1884-85.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Imperial*	—43,786	13,979	—31,326	—38,391	—31,848	—52,670	—33,316	—64,196	—64,379	—77,991	—90,066	—46,774	—41,514	38,674	—47,240	—56,596	—46,404	—50,228	—56,536	—65,359	—42,221
Bengal	15,789	—6,634	—59,625	—1,11,456	—45,218	1,26,758	16,770	33,780	49,075	40,092	84,571	55,595	7,904	1,67,315	77,352	1,73,778	2,25,959	2,39,122	3,11,776	3,06,521	1,59,237
North-Western Provinces and Oudh.	2,19,860	4,00,121	3,68,996	1,94,697	2,84,159	3,03,533	—3,55,816	60,829	7,64,449	7,41,883	3,62,056	5,27,377	2,89,309	4,74,152	3,16,778	3,23,372	2,62,654	1,49,862	1,74,378	5,69,406	5,52,217
Punjab	—51,535	79,311	1,32,677	—7,519	27,248	—3,47,303	—2,46,419	2,597	—2,37,374	1,20,993	1,75,891	3,52,220	73,095	1,63,060	—22,935	1,09,143	1,76,310	1,72,039	2,05,059	2,57,031	1,91,282
Central Provinces	—86,510	25,445	88,064	1,31,056	31,410	—58,910	3,10,192	3,25,495	2,31,095	2,82,428	3,66,489	3,52,949	3,71,031	3,61,576	4,59,104	4,84,151	3,54,627	6,75,871	5,65,400	5,59,711	5,31,381
British Burma	6,71,140	5,86,544	1,37,781	3,16,296	3,93,266	3,62,668	4,17,273	3,93,183	4,90,510	5,93,317	4,11,255	2,83,361	5,45,954	7,44,851	4,18,160	4,26,749	6,04,045	10,91,580	12,74,941	12,91,451	4,59,748
Assam	...	...	...	...	...	...	...	...	...	...	5,582	—1,527	—8,952	33,173	35,751	31,506	26,272	693	76,782	11,993	—17,287
Coorg	54,081	68,161	23,858	65,360	80,648	75,071	47,397	22,258	54,946	64,332	20,016	67,292	42,235	64,746	17,191	46,621	31,370	40,568	73,252	12,709	36,252
Ajmere	...	...	...	...	...	...	...	...	—13,030	—17,628	—15,079	—26,936	—21,535	—11,924	—12,204	—11,899	—11,290	—9,989	—4,156	—6,376	—5,800
Forest Surveys (Imperial) ...	...	...	...	...	...	...	...	...	...	...	—58,556	—78,090	—58,909	—58,929	—60,165	—60,262	—46,840	—40,003	—42,469	—41,247	—30,904
Forest School	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	—19,589
Andamans	2,803	2,515	3,495	6,079	5,071	2,886	7,373	4,229	4,966	4,184	5,516	5,363	3,372	205	5,564	—4,740	25,574	46,161	69,019	12,601	—22,495
Total ...	7,81,947	11,99,741	6,63,929	5,56,113	7,44,765	6,12,023	1,46,454	7,79,155	12,90,568	16,92,044	11,94,141	21,90,614	12,01,950	19,72,013	11,86,259	15,35,208	18,09,045	23,03,250	26,49,565	29,17,456	—647
Madras	1,84,990	1,25,282	1,05,283	1,[illegible]3,668	1,27,589	2,76,383	86,145	1,84,340	46,442	1,38,733	—61,540	86,834	—42,967	—15,314	1,10,974	77,641	2,17,810	2,03,489	2,61,690	1,66,971	16,21,148
Bombay	7,19,720	2,30,472	1,80,627	3,29,205	5,92,257	6,79,242	5,28,642	5,52,384	4,21,374	4,66,495	3,97,376	4,54,531	3,87,679	3,83,812	1,76,971	4,47,723	3,55,460	6,58,295	6,11,593	9,38,928	2,49,503
Total (British India) ...	16,76,657	15,45,195	[illegible]	10,63,9[illegible]	14,54,501	15,67,648	7,61,241	15,14,879	17,48,374	22,97,272	15,03,977	27,31,979	15,46,542	23,40,511	14,76,104	20,60,567	23,82,115	31,65,673	37,22,238	40,23,755	10,57,871
Berar	1,890	6,115	29,856	34,771	59,452	98,928	95,357	54,714	1,72,932	1,76,906	1,69,285	1,41,253	1,54,[illegible]20	1,69,268	1,91,354	1,96,994	1,37,589	80,526	1,36,960	1,51,679	1,40,934
Forest Surveys (Berar) ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	—15,043	—23,570
Baluchistan	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	—2,0[illegible]	934	—6,923	—12,1[illegible]	—7,177
GRAND TOTAL ...	16,78,447	15,51,310	9,68,886	10,98,757	15,06,043	15,68,476	8,56,598	15,69,593	19,21,306	24,74,178	16,73,262	29,72,232	17,01,962	25,09,779	16,57,458	22,57,561	25,17,683	32,47,133	38,52,275	41,49,231	32,28,909

* Includes pay of Inspector General of Forests, certain Home Charges, and undistributable and petty local items.

Appendix A.

RESULTS OF FIRE-PROTECTION IN THE PROVINCES UNDER THE GOVERNMENT OF INDIA.

FIRE-PROTECTION IN THE WHOLE OF INDIA (UNDER THE GOVERNMENT OF INDIA).

Circle.	Total Number of Acres.				Total Cost.	Cost per Acre, in Pies.			Co-efficient of Failure.
	Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.	
					Rs.				
Bengal	3,971,489	400,645	3,570,844	3,178,358	83,866	4·054	4·509	5·066	0·10083
North-Western Provinces and Oudh, Central Circle	1,922,227	110,782	1,811,445	1,670,121	127,569	12·742	13·521	14·866	0·05763
„ „ „ Oudh Circle	1,604,920	115,723	1,489,197	1,278,279	71,001	8·494	9·154	10·664	0·07210
„ „ School Circle	997,140	22,204	974,936	947,625	60,610	11·675	11·936	12·280	0·02227
Central Provinces	8,521,979	632,235	7,889,744	6,973,560	179,491	4·044	4·368	4·942	0·07419
British Burma, Pegu Circle	635,041	34,695	600,346	544,240	114,871	34·730	36·737	40·525	0·05463
„ „ Tenasserim Circle	472,464	55,959	416,505	360,252	15,902	6·462	7·330	8·475	0·11823
Assam	1,008,478	205,023	803,455	570,364	61,521	11·713	14·701	20·710	0·20309
Berar	7,166,298	591,902	6,574,496	6,026,324	40,967	1·097	1·193	1·305	0·08258
Total ...	26,300,036	2,169,068	24,130,968	21,549,123	755,798	5·517	6·013	6·734	0·08247

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

ABSTRACT OF BLOCKS.

Forest Tract.	No. of Years under Protection.	Total number of Acres. Attempted.	Failed.	Protected.	Accepted.	Cost.	Cost per acre, in pies. Attempted.	Protected.	Accepted.	Co-efficient of Failure.
						Rs. a. p.				
Senchal, Mahalderam, Tukdah, and Goompahar ...	4	98,448	...	98,448	97,152	547 12 0	1·068	1·068	1·082	...
Singalila	3	123,762	72	123,690	123,606	643 0 0	0·997	0·998	1·007	0·00058
West Teesta	6	102,528	300	102,228	102,078	1,314 12 0	2·462	2·469	2·473	0·00292
East Teesta	6	218,054	270	217,784	217,018	1,560 3 6	1·374	1·375	1·380	0·00124
Pankasari	4	262,308	50	262,258	261,808	818 0 0	0·599	0·599	0·600	0·00019
Chel	6	191,190	857	190,333	189,774	959 0 0	0·963	0·967	0·970	0·00448
Kurseong	3	8,241	...	8,241	8,241	67 0 0	1·561	1·561	1·561	...
Manjua	3	2,910	...	2,910	2,910	276 0 0	18·210	18·210	18·210	...
Manjha	6	19,434	1,196	18,238	17,008	820 3 0	8·103	8·634	9·289	0·06154
Rest of Balasan	4	31,947	1,527	30,420	29,460	309 0 0	0·517	0·543	0·560	0·04780
Tukria Jhar	3	4,092	154	3,938	3,938	266 0 0	12·181	12·969	12·969	0·03763
Dalka Jhar and Pantapari	6	46,818	3,331	43,487	31,068	3,505 12 0	14·377	15·487	21·631	0·07115
Ramonpokri	9	14,891	220	14,671	14,831	6,490 10 9	83·761	85·017	87·034	0·01477
Sukna and Champasari	6	200,896	16,047	184,849	145,322	10,505 7 0	10·042	10·912	13·880	0·07988
Siligori	...	...	...	...	...	29 0 0	...	...	...	...
Apalchand	7	117,932	26,480	91,452	80,478	3,608 0 0	5·874	7·575	8·608	0·22453
Tondu	7	364,400	50,990	313,410	255,670	2,592 14 0	1·366	1·588	1·947	0·13990
Muraghat	9	98,020	20,160	77,860	55,770	1,008 6 0	1·975	2·486	3·471	0·20567
Rest of Muraghat	4	80,492	9,426	71,066	48,268	331 0 0	0·789	0·894	1·316	0·11710
Dalgaon	5	8,250	2,280	5,970	570	361 12 0	8·419	11·631	121·853	0·27686
Dumchi	6	18,372	500	17,872	16,872	192 0 0	2·005	2·063	2·185	0·02722
Falakata	3	28,734	...	28,734	28,710	636 0 0	4·250	4·250	4·253	...
Borojhar	6	94,080	940	93,140	92,840	2,787 6 0	5·658	5·746	5·773	0·00999
Salkur	2	2,440	...	2,440	2,440	206 0 0	16·202	16·202	16·202	...
Buxa	5	699,692	93,250	606,442	542,310	27,764 10 3	7·604	8·790	9·830	0·13327
Raidak	3	19,200	3,900	15,300	12,100	699 0 0	6·990	8·772	11·091	0·20312
Bhotka	8	102,400	8,040	94,360	88,320	3,103 14 0	5·819	6·313	6·747	0·07852
Kechki, Betlah, Saidope, and Tungari ...	6	240,147	14,560	225,587	213,650	2,821 14 0	2·257	2·402	2·536	0·06062
Ramundag and Kumandi	6	120,264	23,841	96,423	64,902	2,445 14 9	3·905	4·870	7·236	0·19824
Barasand	6	193,293	18,340	175,953	170,104	2,312 3 6	2·315	2·523	2·609	0·07047
Seemah	6	157,440	18,460	138,980	120,520	2,238 5 0	2·729	3·092	3·566	0·11725
Koderma	6	138,414	30,387	108,027	84,765	904 15 0	1·255	1·609	1·998	0·21954
Sitapahar	...	...	Abandoned.	...	...	699 0 0	...	...	...	...
Porohat	1	3,840	...	3,840	3,840	225 0 0	11·250	11·250	11·250	...
Saranda	1	...	...	...	...	286 0 0	...	...	...	...
Saitha	1	18,560	15,480	3,080	3,080	64 0 0	0·662	3·959	3·959	0·83405
Kalhan	1	...	...	...	...	119 0 0	...	...	...	...
Tikarpara	1	103,040	32,000	71,040	71,040	68 0 0	0·127	0·184	0·184	0·31056
Bagmunda	1	40,960	12,587	28,373	28,373	140 0 0	0·656	0·947	0·947	0·30730
Durgapur	1	...	...	...	...	129 0 0	...	...	...	...
Dandimal	1	...	...	...	...	10 0 0	...	...	...	...
Total ...	...	3,971,489	400,345	3,570,844	3,178,358	83,866 8 9	4·054	4·509	5·066	0·10068

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

BENGAL.

ABSTRACT OF YEARS.

Year.	Total number of Acres.				Cost.	Cost per acre, in pies.			Co-efficient of Failure.
	Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.	
					Rs.				
1872-73	...	...	...	...	30	...	...	...	...
1873-74	...	...	...	...	167	...	...	...	...
1874-75	...	...	...	...	93	...	...	...	...
1875-76	...	...	...	...	409	...	...	...	...
1876-77	59,653	80	59,573	51,293	1,546	4·976	4·982	5·787	0·0134
1877-78	113,173	42,340	73,833	69,733	1,963	3·244	5·105	5·912	0·36446
1878-79	179,533	77,780	101,753	99,043	2,740	2·930	5·170	5·312	0·43323
1879-80	417,531	24,731	422,800	298,651	11,333	4·862	5·146	7·286	0·05526
1880-81	461,091	54,364	406,727	310,281	8,978	3·697	4·191	5·494	0·11790
1881-82	588,393	31,174	557,219	482,738	13,093	4·273	4·513	5·207	0·05299
1882-83	641,937	39,788	602,149	558,907	11,699	3·499	3·730	4·055	0·06198
1883-84	655,395	38,529	616,866	588,788	15,841	4·641	4·930	5·169	0·05879
1884-85	821,783	91,859	729,924	729,924	16,122	3·767	4·4 1	4·241	0·11178
Total ...	3,971,489	400,645	3,570,844	3,178,358	83,866	4·054	4·509	5·066	0·10098

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

CENTRAL CIRCLE.

ABSTRACT OF BLOCKS.

Division or District.	Forest Tract.	No. of Years under Protection.	Total Number of Acres.				Cost.	Cost per Acre, in Pies.			Co-efficient of Failure.
			Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.	
							Rs.				
Ganges.	Papidanda	9	Abandoned in 1884-85 ...		...		1,260	...	...	...	...
	Sukwas	4	6,000	136	5,864	5,748	420	13·440	13·752	14·029	0·02267
	Kauria, Andhermajhera, and Jogichaur	5	30,000	911	29,089	27,012	1,674	10·713	11·049	11·899	0·03037
	Hazara	5	10,000	1,700	8,300	6,600	482	9·254	11·150	14·022	0·17000
	Tagnore	9	Abandoned after 1884-85...			...	184	...	...	...	...
Kumaun.	Hura	2	5,482	...	5,482	5,482	2,385	83·532	83·532	83·532	...
	Jamla Sal	3	23,619	623	22,995	22,371	7,116	57·846	59·416	61·073	0·02642
	Nindhore	4	31,811	3,453	28,358	26,996	2,121	12·801	14·360	15·085	0·10885
	Lakhman-Mandi	3	6,000	...	6,000	6,000	488	15·616	15·616	15·616	...
	Salani	9	2,880	200	2,680	1,480	308	20·533	22·065	39·957	0·06944
Garhwal.	Dikala	13	167,681	15,331	152,350	136,396	13,355	15·292	16·831	18·792	0·09143
	Patairpani, Maumpani, and Jamnagwar	8	168,428	8,901	159,527	158,442	9,233	10·531	11·112	11·188	0·05344
	Pipalsot and Gaujrani	7	23,766	2,682	21,084	13,566	1,492	12·054	13·587	21·116	0·11284
	Jarasot and Jamnoli	7	48,209	260	47,949	47,849	2,614	10·411	10·467	10·489	0·00589
	Bhakwa and Damunda	6	67,899	756	67,133	65,874	5,713	16·157	16·339	16·651	0·01113
	Phalai and Ganjera	5	34,785	40	34,745	34,665	2,118	11·690	11·704	11·731	0·00115
	Haldgaddi and Adnala	4	129,876	5,446	124,430	117,138	7,708	11·395	11·894	12·634	0·04193
	Shisham-Khata	3	18,080	2,540	15,540	12,224	2,912	30·924	35·979	45·738	0·14049
	Rehar	5	61,950	11,472	50,478	50,258	6,927	21·469	26·347	26·463	0·18518
	Chilkia Mohan	14	535,639	30,430	505,209	437,852	33,438	11·988	12·707	14·663	0·05681
	Kota	9	208,526	8,365	200,161	188,898	12,056	11·100	11·564	12·253	0·04011
	Garibukhand	9	64,444	5,300	59,144	48,792	6,277	18·701	20·377	24·700	0·08224
Naini Tal.	Naini Tal	10	194,190	10,888	183,302	176,186	4,411	4·361	4·656	4·807	0·05607
	Ranikhet	10	43,329	725	42,604	41,939	1,122	4·972	5·056	5·136	0·01673
	Seoni	6	15,360	61	15,299	15,156	451	5·637	5·660	5·713	0·00397
	Ganiadeoli	8	6,400	127	6,273	6,092	382	11·460	11·692	12·039	0·01984
	Kathalekh	8	8,080	280	7,800	7,620	451	10·717	11·102	11·217	0·03465
	Padholi	4	2,560	139	2,421	2,185	174	13·081	13·800	15·290	0·05430
	Chaubatha	4	5,120	13	5,107	5,081	245	9·188	9·211	9·258	0·00254
	Chilmano	2	1,280	2	1,278	1,276	37	5·559	5·560	5·570	0·00156
	Karchuli	1	203	...	203	203	3	2·837	2·837	2·837	...
	Siun	1	640	..	640	640	12	3·600	3·600	3·600	...
	TOTAL	...	1,922,227	110,782	1,811,445	1,670,121	127,569	12·742	13·521	14·666	0·05763

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

NORTH-WESTERN PROVINCES AND OUDH.

CENTRAL CIRCLE.

ABSTRACT OF YEARS.

Year.	Total number of Acres.				Cost.	Cost per acre, in pies.			Co-efficient of Failure.
	Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.	
					Rs. a. p.				
1871-72	12,800	...	12,800	640	112 0 0	1·680	1·680	33·600	...
1872-73	16,473	12,160	4,313	4,160	403 0 0	4·697	17·940	18·600	0·73817
1873-74	20,160	...	20,160	20,160	828 0 0	7·886	7·886	7·886	...
1874-75	29,899	...	29,899	24,187	3,838 0 0	23·977	23·977	29·640	...
1875-76	85,954	11,152	74,802	50,442	6,801 11 0	15·193	17·458	25·889	0·12974
1876-77	113,815	1,123	112,692	81,061	5,597 10 3	9·433	9·537	13·259	0·00987
1877-78	143,209	10,891	132,318	97,623	11,534 8 2	15·464	16·737	22·685	0·07605
1878-79	151,846	41,254	110,592	109,022	6,724 7 8	8·502	11·674	11·842	0·27168
1879-80	165,510	481	165,029	157,918	11,794 2 6	13·652	13·722	14·339	0·00291
1880-81	193,198	11,340	181,858	173,426	12,355 11 6	12·279	13·045	13·679	0·05869
1881-82	233,663	8,655	225,008	218,103	16,145 13 11	13·780	14·311	14·764	0·03708
1882-83	250,531	3,657	246,874	238,510	17,820 2 10	13·657	13·859	14·316	0·01459
1883-84	252,163	9,538	242,625	242,394	17,760 15 5	13·523	14·055	14·068	0·03785
1884-85	253,006	531	252,475	252,475	15,851 15 9	11·825	11·849	11·849	0·00210
Total ...	1,922,227	110,782	1,811,415	1,670,121	1,27,568 13 0	12·742	13·521	14·666	0·05763

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attemptod &c., year by year.

NORTH-WESTERN PROVINCES AND OUDH.

OUDH CIRCLE.

ABSTRACT OF BLOCKS.

Forest tract.	No. of Years under Protection.	Total number of Acres.				Cost.	Cost per Acre, in pies.			Co-efficient of Failure.
		Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.	
						Rs. a. p.				
Mahofe	6	129,186	32,017	97,169	70,128	9,403 10 4	13·976	18·581	25·086	0·24783
Marha	9	112,221	14,249	97,972	85,905	9,592 3 2	16·411	18·797	21·439	0·12697
Dudua	13	235,190	24,850	210,340	127,600	19,779 13 3	16·142	18·019	29·753	0·10566
Kasumbha ...	5	99,200	18,880	80,320	36,480	4,678 14 2	9·056	11·184	24·626	0·19032
Nishangarh	8	147,210	6,415	140,795	139,823	4,753 8 3	6·200	6·482	6·527	0·04357
Gorakhpur	10	724,696	18,001	706,695	663,911	12,241 2 10	3·243	3·325	3·510	0·02484
Bahraich ...	12	157,217	1,311	155,906	154,142	10,552 4 5	12·886	12·995	13·145	0·00833
Total ...	...	1,604,920	115,723	1,489,197	1,278,279	71,001 7 5	8·494	9·154	10 664	0·07215

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

NORTH-WESTERN PROVINCES AND OUDH.

OUDH CIRCLE.

ABSTRACT OF YEARS.

Year.	Total number of Acres.				Cost.	Cost per Acre, in pies.			Co-efficient of Failure.
	Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.	
	Acres.	Acres.	Acres.	Acres.	Rs.				
1872-73	12,800	...	12,800	3,420	123	1·845	1·845	6·954	...
1873-74	20,480	...	20,480	11,100	152	1·425	1·425	2·629	...
1874-75	20,480	...	20,480	11,100	2,573	24·122	24·122	44·506	...
1875-76	82,266	...	82,266	72,886	2,778	6·483	6·483	7·318	...
1876-77	104,367	1,400	102,967	79,577	4,642	8·880	8·889	11·200	0·01341
1877-78	114,535	13,020	101,515	87,070	3,359	5·631	6·353	7·406	0·11368
1878-79	116,895	13,940	102,955	90,550	3,552	5·834	6·624	7·063	0·11925
1879-80	145,389	4,297	141,092	117,067	7,402	9·775	10·072	12·140	0·02955
1880-81	178,615	4,865	173,754	129,165	7,163	7·700	7·915	10·648	0·02724
1881-82	182,100	32,660	149,530	129,165	9,732	10·256	12·475	12·496	0·17926
1882-83	184,064	1,877	182,187	142,008	7,248	7·550	7·632	9·800	0·01019
1883-84	188,867	41,186	147,681	147,681	10,472	10·645	13·615	13·615	0·21806
1884-85	253,958	2,478	251,490	251,490	11,805	8·925	9·008	9·008	0·00976
Total ...	1,604,920	115,723	1,489,197	1,278,279	71,001	8·494	9·154	10·664	0·07215

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

NORTH-WESTERN PROVINCES AND OUDH.

SCHOOL CIRCLE.

ABSTRACT OF BLOCKS.

	Forest Tract.	No. of Years under Protection.	Total number of Acres. Attempted.	Failed.	Protected.	Accepted.	Cost.	Cost per acre, in pies. Attempted.	Protected.	Failed.	Co-efficient of Failure.
							Rs.				
Dehra Dún.	Ramgarh	6	38,532	234	38,298	37,760	4,001	19·93	20·060	20·34	0·00607
	Bulawala	14	115,480	6,788	108,692	108,692	14,146	22·046	23·424	23·424	0·05878
	Nagsidh	2	9,495	10	9,485	9,486	1,046	21·15	21·18	21·18	0·00105
	Kansrau	6	44,888	453	44,435	44,323	4,517	19·32	19·52	19·57	0·01009
	Motichur	2	7,645	...	7,645	7,432	575	13·44	13·44	13·82	...
	Thano	6	35,217	2,127	33,090	29,149	5,603	30·545	32·508	36·94	0·06039
	Chandrabani	6	30,250	1,068	29,182	26,557	3,287	20·06	21·63	23·99	0·03535
	Sherpur	1	12,101	500	11,601	11,601	367	5·82	6·07	6·07	0·04132
	Tiuli	1	15,100	...	15,100	15,100	249	3·14	3·14	3·14	...
	Dholkot	1	4,826	...	4,826	4,826	399	15·87	15·87	15·87	...
	Total	...	313,534	11,180	302,354	294,924	34,190	20·93	21·71	22·23	0·03566
							Dholkhand				
Jaunsar.	Kalsi	7	15,634	532	15,102	15,017	130	4·05	4·19	4·22	0·03403
	Cantonment Blocks	5	2,805	14	2,791	2,772	330	11·98	12·04	12·13	0·005
	Rawai and Jaunpur	6	17,280	214	17,066	16,466	175	1·52	1·54	2·11	0·01232
	Lokandi	7	34,336	19	34,317	34,279	137	3·58	3·59	3·60	0·00055
	Deoban	5	28,875	123	28,752	28,645	650	3·94	3·97	3·98	0·0043
	Ekra-konain	6	59,137	521	58,616	58,571	594	2·64	2·66	2·66	0·0088
	Bawar	8	91,572	1,131	90,441	85,292	813	3·92	3·97	4·21	0·01235
	Datmir	7	16,640	50	16,590	16,590	1,869	2·14	2·15	2·15	0·003
	Kfunigadh	8	25,901	3,965	21,936	14,994	186	10·30	12·16	17·80	0·15308
	Hano	2	2,520	...	2,520	2,520	1,390	8·31	8·31	8·31	...
	Deogarh	8	65,931	384	65,547	63,495	108	3·23	3·25	3·36	0·00582
	Deota	8	101,144	2,765	98,379	96,657	1,111	3·91	4·02	4·09	0·02734
	Binkser	3	150	...	150	150	3,090	15·36	15·36	15·36	...
	Bashahr	...	5,684	12	5,672	5,672	12	3·15	3·16	3·16	0·00209
	Total	...	467,609	9,730	457,879	441,116	93				
							10,558 0 0	4·337	4·427	4·595	0·0208
Saharanpur.	Dakarkot	6	55,490	16	55,474	55,434	5,521	19·103	19·108	19·123	0·00029
	Dhólkhand	5	50,400	75	50,325	50,240	1,962	7·474	7·485	7·496	0·00149
	Chillawala	4	63,628	225	63,403	63,178	1,702	5·136	5·154	5·172	0·00253
	Kalushahid	6	6,485	754	5,731	3,585	1,484	43·93	49·72	79·09	0·11626
	Patri (plantation)	5	3,150	164	2,986	2,851	2,046	124·71	132·49	136·15	0·05206
	Dhaula	6	4,000	30	3,970	3,450	991	47·54	47·90	55·15	0·0075
	Sendhli I.	3	1,500	30	1,470	1,470	582	74·45	76·02	76·02	0·02
	Baniswala	3	1,500	...	1,500	1,500	285	36·48	36·48	36·48	...
	Lalwala	2	1,408	...	1,408	1,408	544	74·18	74·18	74·18	...
	Tira	2	750	...	750	750	213	54·85	54·85	54·85	...
	Badshahibagh	1	25,266	...	25,266	25,266	399	3·03	3·03	3·03	...
	Sendhli II.	1	2,060	...	2,060	2,060	2	0·18	0·18	0·18	...
	Mohan	1	360	...	360	360	2	1·07	1·07	1·07	...
	Total	...	215,997	1,294	214,703	211,585	15,733	13·985	14·07	14·277	0·003
	Grand Total	...	997,140	22,204	974,936	947,625	60,610	11·67	11·93	12·28	0·02227

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

NORTH-WESTERN PROVINCES AND OUDH.

SCHOOL CIRCLE.

ABSTRACT OF YEARS.

Year.	Total number of Acres.				Cost.	Cost per acre, in pies.			Co-efficient of Failure.
	Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.	
					Rs. a. p.				
1871-72	245	...	245	245	.....	...	...	...	...
1872-73	306	...	306	306	105 0 0	...	...	...	...
1873-74	3,840	...	3,840	3,840	751 14 8	...	...	...	...
1874-75	7,680	3,200	4,480	4,480	1,982 12 2	...	...	...	...
1875-76	7,680	1,370	6,310	6,310	418 4 3	...	...	...	...
1876-77	7,680	...	7,680	7,680	1,303 6 9	...	...	...	...
1877-78	36,582	...	36,582	33,299	3,041 14 10	15·966	15·966	17·539	...
1878-79	51,893	2,877	49,021	47,112	4,588 0 0	16·973	17·969	18·628	0·05544
1879-80	90,647	1,464	89,183	81,822	6,300 0 0	13·344	13·563	14·783	0·01613
1880-81	113,570	988	112,582	104,874	6,618 0 0	11·188	11·287	12·116	0·00870
1881-82	141,785	5,661	136,124	131,398	7,593 0 0	10·282	10·710	11·095	0·03993
1882-83	148,929	2,962	145,967	143,907	7,659 0 0	9·845	10·074	10·218	0·01986
1883-84	157,856	2,946	154,910	154,646	9,428 0 0	11·467	11·685	11·705	0·01866
1884-85	228,442	736	227,706	227,706	10,361 0 0	8·700	8·729	8·729	0·00322
Total ...	997,140	22,204	974,936	947,625	60,480 4 8				
				Add Dholkhand ...	129 0 0				
					60,609 4 8	11·675	11·936	12·280	0·02227

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

ABSTRACT OF BLOCKS.

Forest Tract.	Number of Years under Protection.	Total number of Acres. Attempted.	Failed.	Protected.	Accepted	Cost. Rs, a, p.	Cost per acre, in pies. Attempted.	Protected.	Accepted.	Co-efficient of Filure.
Hathibari	15	31,845	640	31,205	25,445	3,085 7 7	18·597	18·578	23·274	0·02009
Kantranala	1	3,548	...	3,548	3,548	496 9 5	26·870	26·870	26·870	...
Banjar Valley	10	495,867	43,822	452,045	309,301	5,937 11 0	2·299	2·522	3·686	0·08837
Motinala	10	16,586	339	16,247	15,827	541 15 3	6·243	6·404	6·576	0·02044
Jagmandal	18	526,630	13,415	513,215	415,423	21,350 8 6	7·784	7·987	9·868	0·02548
Chuharigogarh	18	40,667	1,548	39,119	29,789	5,046 4 7	23·825	24·767	32·525	0·03804
Barela	13—5	35,765	156	35,609	35,297	2,084 5 1	11·196	11·245	11·344	0·00436
Airi	7—6	12,900	140	12,760	12,215	225 6 6	3·355	3·391	3·543	0·01084
Singrampur	14	91,770	618	91,152	89,316	2,521 8 10	5·275	5·311	5·420	0·00673
Bijeragogarh	14	294,508	40	294,468	294,108	6,746 14 1	4·398	4·399	4·404	0·00013
Lower Gour	4	15,034	...	15,034	15,034	496 12 9	6·344	6·344	6·344	...
Rajaborari	10	882,605	17,743	865,862	865,292	7,760 3 4	1·686	1·721	1·722	0·02008
Saoligarh	10	637,691	27,091	610,600	587,148	5,112 4 7	1·539	1·607	1·672	0·04248
Bori	20	569,400	5,680	563,720	539,840	16,614 13 2	5·602	5·659	5·909	0·00997
Kalibhit	11	529,920	61,645	468,275	441,658	2,351 3 0	0·852	0·964	1·022	0·11633
Punasa	13—10	716,560	144,499	572,061	269,010	8,247 14 7	2·210	2·768	5·887	0·20166
Chandgarh	8	491,520	158,786	332,734	256,612	3,881 11 6	1·312	2·239	2·904	0·32305
Khandwa	8	280,320	6,103	274,217	269,547	5,338 12 10	3·656	3·738	3·803	0·02177
Bainpura	6	3,600	...	3,600	3,600	128 13 8	6·872	6·872	6·872	...
Gunjeri	6	21,000	...	21,000	21,000	312 12 8	2·860	2·860	2·860	...
Undria Booria	6	18,600	18	18,582	18,572	197 14 6	2·042	2·044	2·055	0·0009
Bhojwa Baheria	6	12,000	180	11,820	11,820	248 1 8	3·97	3·97	3·97	0·015
Ajnal	6	9,000	8	8,992	8,968	198 6 4	4·232	4·236	4·247	0·0009
Chaoria	5	850	...	850	850	24 10 10	5·348	5·348	5·348	...
Bowergarh	11—10	362,560	37,674	324,886	285,430	6,611 4 10	3·501	3·907	4·447	0·10321
Khawapur	10—9	143,680	15,880	127,800	100,480	1,798 4 11	2·403	2·701	3·436	0·11052
Bhimaram	13	148,199	378	147,821	147,677	14,366 13 11	18·613	18·904	18·922	0·00255
Mirkallu	10	81,579	330	81,249	79,339	10,724 9 3	25·240	25·349	25·953	0·00404
Tamba	11	278,590	17,238	261,352	257,084	12,162 14 5	8·368	8·935	9·084	0·06888
Govardhan	13	145,574	535	145,039	144,482	6,577 13 1	8·675	8·707	8·741	0·00367
Pipalkhota	4	5,120	...	5,120	5,120	20 15 0	0·785	0·785	0·785	...
Korai Block	16	409,450	17,310	392,140	343,100	9,787 13 8	4·590	4·792	5·477	0·04228
„ Sakata	6	60,120	...	60,120	60,120	1,024 0 0	17·012	17·012	17·012	...
East Pench	10	424,760	13,520	411,240	367,240	6,613 8 3	2·989	3·088	3·468	0·08183
Nagalwari	8	72,880	155	72,725	72,570	1,278 4 0	3·367	3·374	3·396	0·00213
Paraspani	7	53,120	90	53,030	52,930	563 4 3	2·036	2·039	2·039	0·00169
Narhar	5	195,200	2,000	193,200	191,200	2,188 14 0	2·153	2·175	2·197	0·01024
Garhakota	11	31,889	132	31,757	30,619	144 5 10	0·869	0·873	0·905	0·00414
Hath-ko	11	106,726	9,296	97,430	87,634	2,799 7 9	5·036	5·517	6·133	0·08710
Rangir	10	26,883	7,103	19,780	19,150	250 10 4	1·790	2·433	2·513	0·26422
Rampura	7	19,040	...	19,040	19,040	463 12 3	4·676	4·676	4·676	...
Tigora	5	2,295	...	2,295	2,295	17 3 0	1·438	1·438	1·438	...
Dhuga Erjhar	6	156,492	26,886	129,606	115,363	2,366 14 6	2·903	3·505	3·938	0·17150
Jalandhar	5	14,425	213	14,212	13,360	305 8 3	2·735	2·877	2·953	0·01476
Pandratola	9	44,211	1,024	43,187	40,007	473 7 3	2·056	2·105	2·272	0·02316
Total	...	8,521,979	632,235	7,889,744	6,973,560	179,490 14 2	4·044	4·37	4·94	0·07419

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

CENTRAL PROVINCES.

ABSTRACT OF YEARS.

Year.	Total number of Acres.				Cost.				Cost per acre, in Pies.			Co-efficient of Failure.
	Attempted.	Failed.	Protected.	Accepted.	Rs.	a.	p.		Attempted.	Protected.	Accepted.	
1865-66	23,680	...	23,680	22,080	847	11	8		6·873	6·873	7·371	...
1866-67	23,680	...	23,680	22,080	847	11	8		6·873	6·873	7·371	...
1867-68	62,080	...	62,080	46,636	4,595	8	5		14·155	14·155	18·842	...
1868-69	62,080	...	62,080	46,636	4,595	8	5		14·155	14·155	18·842	...
1869-70	63,329	...	63,320	47,876	5,596	6	5		16·969	16·969	22·443	...
1870-71	65,443	...	65,443	49,359	5,671	11	5		16·640	16·640	21·859	...
1871-72	92,478	...	92,478	75,794	6,034	8	1		12·528	12·528	15·286	...
1872-73	128,915	...	128,915	95,991	3,970	3	3			5·913	7·941	...
1873-74	128,924	2,020	126,904	96,000	8,786	13	7		5·639	5·729	7·574	0·01566
1874-75	174,357	25,718	148,639	122,785	5,763	6	0		6·346	7·445	9·012	0·14750
1875-76	383,419	37,823	345,596	255,302	10,812	10	10		5·412	6·007	8·131	0·09864
1876-77	505,918	12,344	493,574	368,939	14,338	2	9		5·441	5·577	7·462	0·02439
1877-78	691,609	123,458	568,151	456,859	10,567	9	4		2·934	3·571	4·441	0·17850
1878-79	736,468	54,595	681,873	553,354	11,107	11	4		2·895	3·128	3·854	0·07413
1879-80	829,351	112,825	716,526	626,850	12,462	11	7		2·862	3·312	3·786	0·13604
1880-81	896,642	53,650	842,992	744,258	13,416	14	5		2·873	3·056	3·461	0·05988
1881-82	910,602	127,141	783,461	749,022	13,750	10	3		2·921	3·370	3·524	0·13962
1882-83	910,659	20,076	890,583	842,903	15,571	13	1		3·283	3·357	3·547	0·02204
1883-84	914,403	39,995	874,408	856,475	17,137	9	8		3·598	3·763	3·846	0·04374
1884-85	917,951	22,590	895,361	895,361	18,615	8	0		3·852	3·950	3·950	0·02461
Total. ...	8,521,979	632,235	7,889,744	6,973,660	1,79,490	14	2		4·044	4·368	4·942	0·07419

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

BURMA.

PEGU CIRCLE.

ABSTRACT OF BLOCKS.

Forest Tract.	No. of Years under Protection.	Total number of Acres.				Cost.	Cost per acre, in pies.			Co-efficient of Failure.	Remarks.
		Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.		
						Rs.					
Dáwé	2	61,500	1	61,499	61,498	160	0·499	0·499	0·499	...	The figures and totals for the various blocks, especially Prome plantation, Magayee, Kyetpyugan, Myaung Minhla, and Miphla Mokka are believed to be more correct than those quoted in the Annual Reports.
Nyaulé	8	44,720	3,257	41,463	31,616	14,803	63·555	68·547	82·106	0·07282	
Bwet	9	25,974	3,790	22,184	12,805	8,864	65·523	76·717	132·908	0·14591	
Pyun Chaung	19	44,352	54	44,298	44,212	5,860	25·368	25·399	25·448	0·00122	
Kangyi	9	34,209	2,218	31,961	30,369	11,529	64·707	69·258	72·560	0·06571	
Magayee	13	25,491	1,436	24,055	23,632	21,738	163·732	173·506	176·612	0·05633	
Kyetpyugan	6	4,128	31	4,097	3,977	8,660	402·790	405·838	418·084	0·00751	
Chaungzauk and Gwégyo	7	23,109	1,209	21,897	20,141	9,179	76·273	80·484	87·501	0·05234	
Yané	9	51,840	100	51,740	51,340	3,719	13·771	13·801	13·908	0·00193	
Gwédouksan	7	1,010	8	1,002	994	551	104·744	105·581	106·430	0·00792	
Myaung Minhla	7	1,990	220	1,770	1,740	1,130	109·025	122·576	124·689	0·11055	
Thonzé Kôn Bilin	7	13,172	13	13,159	13,107	840	12·244	12·256	12·305	0·00099	
Prome Plantation	10	754	4	750	744	710	182·122	183·093	184·570	0·00530	
East Swa	3	51,840	17	51,823	51,820	2,922	10·822	10·826	10·826	0·00033	
Minhla Mokka	7	12,696	1,139	11,557	9,026	1,600	25·558	28·077	35·950	0·09971	
Bawbin Chaungwa	16	10,290	60	9,689	8,150	4,387	81·836	86·934	103·350	0·05840	
Myodwin	7	280	...	280	280	660	452·571	452·571	452·571	...	
Mokka Bilin	14	227,666	20,567	207,099	175,766	16,635	14·117	15·519	18·228	0·09034	
Kabaung	1	23	...	23	23	49	409·043	409·043	409·043	...	
Myauktaung	...	...	...	...	...	785	...	...	...	...	
Total ...	..	635,041	34,695	600,346	544,240	114,871	34·730	36·737	40·525	0·05463	

Note.—Total ... 114,871
Deduct excess in above for Magayee and Kyetpyugan ... 1
" " " for Prome Plantation ... 593
594
114,277 (agrees with Total in Report for 1894-95).

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

BURMA.

PEGU CIRCLE.

ABSTRACT OF YEARS.

Year.	Total Number of Acres. Attempted.	Failed.	Protected.	Accepted.	Cost.	Cost per acre, in pies. Attempted.	Protected.	Accepted.	Co-efficient of failure.	Remarks.
					Rs. a. p.					
1865-66 ...	...	...	...	...	194 0 0					Total is Rs. 201 less than it should be. The errors are Rs. 200 in Mokka Bilin and Re. 1 in Myédwin, but they are not discoverable in the Annual Reports.
1866-67 ...	44	...	44	44	68 0 0					
1867-68 ...	164	...	164	164	72 0 0					
1868-69 ...	284	...	284	284	68 0 0					
1869-70 ...	915	...	915	715	215 8 0	Distribution of expenditure during these years uncertain, but the total up to 1872-73 is correct.				
1870-71 ...	985	270	715	715	436 8 0					
1871-72 ...	1,071	...	1,071	1,071	1,005 8 0					
1872-73 ...	12,091	...	12,091	11,937	2,343 8 0					
1873-74 ...	18,619	45	18,574	16,490	5,020 0 0	61·053	61·195	68·929	0·00242	
1874-75 ...	18,825	28	18,797	16,696	4,772 0 0	48·724	48·796	54·936	0·00148	
1875-76 ...	19,388	30	19,358	17,256	4,837 0 0	47·901	47·975	53·819	0·00155	
1876-77 ...	32,157	1,821	30,336	25,250	16,906 0 0	100·941	107·000	126·058	0·05663	
1877-78 ...	38,042	478	37,564	30,810	7,629 0 0	38·504	38·967	47·542	0·01256	
1878-79 ...	41,214	1,662	39,552	33,885	8,817 0 0	41·215	42·946	50·129	0·01682	
1879-80 ...	55,467	1,295	54,172	37,730	9,632 0 0	33·341	34·139	49·012	0·02335	
1880-81 ...	56,378	15,520	40,858	38,556	9,045 0 0	30·804	42·504	45·012	0·27530	
1881-82 ...	55,852	596	55,256	45,568	9,873 0 0	33·940	34·306	41·309	0·01069	
1882-83 ...	73,332	8,359	64,973	63,073	10,097 0 0	28·007	31·610	32·563	0·11399	
1883-84 ...	104,755	1,771	102,984	100,858	10,865 0 0	19·914	20·256	20·684	0·01690	
1884-85 ...	105,458	2,820	102,638	102,638	10,459 0 0	19·012	19·565	19·565	0·02674	
Total ...	635,041	34,695	600,346	544,240	113,885 0 0					
			Add Myauktaung ...		785 0 0					
					111,670 0 0					
				Add errors ...	201 0 0					
					114,871 0 0	34·730	36·737	40·525	0·05463	

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c. year by year.

TENASSERIM CIRCLE.

ABSTRACT OF BLOCKS.

Forest Tract.	No. of Years under Protection.	Total number of Acres.				Cost.	Cost per acre, in pies.			Co-efficient of Failure.
		Attempted.	Failed	Protected.	Accepted.		Attempted.	Protected.	Accepted.	
						Rs.				
Sinzwé	8	71,680	1,979	69,701	65,760	7,009	18·750	19·282	20·438	0·02712
Wamu	10	18,240	3,320	14,920	8,400	169	1·779	2·175	3·863	0·18202
Kabilu	7	8,960	1,662	7,298	7,388	245	5·250	6·445	33·890	0·18560
Méwanig	9	71,040	...	71,040	66,240	205	0·554	0·554	0·594	...
Min-gan-nwé	8	30,720	...	30,720	30,720	11	0·069	0·069	0·069	...
Oukangyi, &c.	9	108,400	27,514	80,886	58,250	786	1·392	1·866	2·591	0·25382
Mépalé West	4	89,600	18,438	71,162	62,842	4,729	10·133	12·759	14·448	0·20579
Kyun Chaung	6	62,720	686	62,034	60,243	1,407	5·837	5·902	6·078	0·01092
Dali	8	4,426	1,760	2,666	331	554	24·033	39·898	321·354	0·39765
Nat Stream	2	3,600	...	3,600	3,600	285	15·200	15·200	15·200	...
Pakabo	2	6	...	6	6	11	335·333	335·333	335·333	...
Tagé Laung	1	3,072	600	2,472	2,472	...	...	...	...	...
Total	...	472,464	55,959	416,505	360,252	15,902	6·462	7·330	8·475	0·11823

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

BURMA.

TENASSERIM CIRCLE.

ABSTRACT OF YEARS.

Year.	Total number of Acres.				Cost.	Cost per acre, in pies.			Co-efficient of Failure.
	Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.	
					Rs. a. p.				
1870-71					.....	.....	.....	.....	.....
1871-72					30 0 0	.....	.....	.....	.....
1872-73	Figures for these years rejected as being untrustworthy, or fire-protection a failure.				.....	.....	.....	.....	.....
1873-74					50 12 0	.....	.....	.....	.....
1874-75					20 0 0	.....	.....	.....	.....
1875-76	1,760	.....	1,760	249	20 0 0	2·182	2·182	2·182	.....
1876-77	27,360	.....	27,360	12,400	298 15 0	2·098	2·098	2·098	.....
1877-78	45,450	14,816	30,634	24,471	468 4 0	1·978	2·935	3·715	0·32600
1878-79	32,970	1,200	31,770	24,489	968 9 0	5·640	5·853	7·594	0·03640
1879-80	43,170	929	42,241	33,959	1,298 13 6	5·776	5·903	7·343	0·02152
1880-81	39,840	3,800	36,040	33,918	1,533 12 8	7·392	8·171	8·682	0·09539
1881-82	60,120	1,310	58,810	46,511	1,409 0 0	4·499	4·600	5·816	0·02179
1882-83	61,914	11,674	50,240	47,730	1,793 0 0	5·560	6·852	7·213	0·18855
1883-84	78,452	14,432	64,020	62,844	3,106 0 0	7·601	9·315	9·489	0·18396
1884-85	81,128	7,798	73,630	73,630	4,905 0 0	11·566	12·789	12·789	0·09577
Total	472,464	55,959	416,505	360,252	15,902 4 2	6·462	7·330	8·475	0·11823

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

ABSTRACT OF BLOCKS.

Forest Tract.	No. of Years under Protection.	Total number of Acres.				Cost.	Cost per acre, in pies.			Co-efficient of Failure.
		Attempted.	Failed.	Protected.	Accepted.		Attempted	Protected.	Accepted.	
						Rs. a. p.				
Sidli (with Chirang)	9	320,067	112,750	207,317	110,602	10,057 14 3	6·034	9·315	17·660	0·35227
Guma	7	110,438	58,330	52,108	19,276	8,652 14 6	15·043	31·833	86·188	0·52817
Panbari	5	7,440	940	6,500	6,350	403 8 0	10·413	11·919	12·200	0·12634
Barduar	12	165,660	2,000	163,660	142,800	6,356 6 0	7·367	7·457	8·547	0·01207
Pautan	12	98,012	8,810	89,202	60,362	3,145 5 0	6·161	6·792	10·005	0·08989
Mataikhat	12	24,240	380	23,860	20,220	2,708 12 9	21·456	21·797	25·721	0·01567
Kalsi	11	35,414	4,690	30,724	10,458	5,208 6 5	28·726	33·111	97·274	0·13243
Jara	11	10,885	...	10,885	9,020	1,646 1 0	29·035	29·035	35·038	...
Milmillia	6	12,705	1,255	11,450	11,420	1,660 6 3	25·092	27·842	27·915	0·09878
Mayang	8	14,400	100	14,300	13,400	116 0 0	1·547	1·557	1·662	0·00694
Rani	3	30,000	7,600	22,400	16,400	368 0 0	2·355	3·154	4·308	0·25333
Kawa Sing	3	10,010	200	9,810	9,180	340 0 0	6·521	6·654	7·111	0·01998
Singra	6	15,000	3,672	11,328	4,719	105 0 0	1·344	1·779	4·272	0·24480
Kalipara	12	40,511	1,351	39,160	36,470	4,071 12 6	19·298	19·964	21·436	0·03335
Garumari	5	900	...	900	900	481 6 6	102·700	102·700	102·700	...
Charduar...	7	5,109	150	4,959	4,959	316 0 0	11·871	12·234	12·234	0·02936
Bamoni Hill	7	57	...	57	56	195 0 0	640·000	640·000	651·429	...
Hajo	...	...	...	...	...	57 0 10	...	.....	...	...
Khaling Duar	2	26,424	336	26,088	25,784	10 0 0	0·073	0·074	0·075	0·01272
Kholahat	10	19,032	136	18,896	18,444	1,823 11 0	18·393	18·520	18·984	0·00714
Devoka	10	4,678	3	4,675	4,411	1,197 0 0	49·128	49·160	52·102	0·00064
Diju or Saloni	6	16,516	262	16,254	15,440	1,052 0 0	12·229	12·427	13·082	0·01586
Shillong and Riat Khwan	11	40,980	2,058	38,922	29,693	11,468 10 4	53·686	56·525	74·093	0·05022
Total ...	...	1,008,478	205,023	803,455	570,364	61,521 2 6	11·713	14·701	20·710	0·20309

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

ABSTRACT OF YEARS.

Year.	Total number of Acres.				Cost.	Cost per acre, in pies.			Co-efficient of Failure.
	Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.	
					Rs. a. p.				
1873-74	10,560	...	10,560	8,360	92 7 0	1·680	1·680	2·123	...
1874-75	32,150	...	32,150	19,110	1,203 4 0	7·166	7·166	12·089	...
1875-76	36,319	2,115	34,204	21,424	1,399 8 9	7·396	7·856	12·543	0·05823
1876-77	65,366	7,530	57,836	24,148	3,790 6 1	11·427	12·915	31·015	0·11520
1877-78	72,512	13,954	58,558	26,248	3,793 0 8	10·308	12·764	28·477	0·19243
1878-79	88,872	55,683	33,189	26,979	4,141 0 0	8·946	23·956	29·466	0·62655
1879-80	92,425	450	91,935	51,762	6,216 0 0	12·013	12·961	23·057	0·00530
1880-81	104,325	1,385	102,940	52,092	6,053 8 0	11·141	11·291	22·312	0·01328
1881-82	105,212	42,785	62,427	52,449	6,144 0 0	11·212	18·896	22·491	0·40665
1882-83	132,700	35,049	97,651	70,663	8,900 0 0	12·877	17·499	24·182	0·26412
1883-84	134,039	39,125	94,914	90,038	9,486 0 0	13·588	19·189	20·228	0·29189
1884-85	133,998	6,907	127,091	127,091	10,302 0 0	14·761	15·563	15·563	0·05154
Total ...	1,008,478	205,023	803,455	570,364	61,521 2 6	11·713	14·701	20·710	0·20309

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

ABSTRACT OF BLOCKS.

Forest Tract.	No. of Years under Protection.	Total number of Acres.				Cost.	Cost per acre, in pies.			Co-efficient of Failure.
		Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.	
						Rs. a. p.				
Raipur Block	16	262,479	4,960	257,519	227,696	6,651	4·865	4·958	5·608	0·01889
Remainder of Bairagarh	14	3,506,462	165,226	3,341,236	3,295,342	8,841	0·462	0·482	0·492	0·04709
Gugumal	12	1,446,840	62,431	1,384,409	1,166,812	3,973	0·527	0·551	0·654	0·04315
Chikalda	...	...	...	...	...	78	1·248	1·248	1·248	...
Amraoti Hills	5	71,438	7,027	64,411	61,252	1,849	4·97	5·511	5·792	0·09836
Gurumatergaon	12	512,256	41,933	470,323	437,900	4,017	1·505	1·639	1·761	0·08186
Chatbori	10	260,478	72,154	188,324	165,072	2,823	2·08	2·878	3·270	0·27700
Penganga	10	116,490	19,249	97,241	73,590	1,996	3·29	3·941	5·208	0·16524
Loni and Bhongaon	4	9,107	2	9,105	9,100	5	0·105	0·105	0·105	0·0002
Rui	4	26,519	2,180	24,339	21,728	337	2·44	2·66	2·977	0·0822
Amdari	2	27,434	66	27,368	27,368	448	3·135	3·143	3·143	0·0024
Kinwat	10	532,378	104,256	428,122	301,980	4,728	1·704	2·12	3·003	0·19583
Kelapur	5	194,180	84,893	109,287	79,214	2,144	2·12	3·76	5·19	0·4372
Darwha	4	159,255	14,071	145,184	137,294	2,878	3·469	3·806	4·025	0·08835
Wún	3	31,475	13,354	18,121	11,829	395	2·49	4·185	6·411	0·42745
Gahuli	1	9,507	...	9,507	9,507	82	1·65	1·65	1·65	...
District Forests	...	...	...	...	...	122	...	...	...	...
Total ...	...	7,166,298	591,802	6,574,496	6,026,324	40,967	1·097	1·193	1·305	0·08256

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

BERAR.

ABSTRACT OF YEARS.

Year.	Total number of Acres.				Cost.	Cost per acre, in pies.			Co-efficient of Failure.
	Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.	
					Rs. a. p.				
1869-70	19,200	.....	19,200	14,231	.....	.....	.....	.....	.....
1870-71	19,200	.....	19,200	14,231	647 14 3	6·48	6·48	8·74	.....
1871-72	256,000	123,360	132,640	132,631	402 1 8	0·302	0·582	0·582	0·48
1872-73	256,000	30,080	225,920	220,951	1,001 3 2	0·814	0·850	0·87	0·1175
1873-74	321,200	.....	321,200	303,431	686 8 7	0·41	0·41	0·434	.....
1874-75	343,040	34,188	308,852	393,883	1,206 1 0	0·675	0·750	0·762	0·09966
1875-76	469,800	58,080	411,720	367,267	1,561 1 7	0·425	0·485	0·537	0·1236
1876-77	600,109	9,167	590,942	431,517	1,920 14 0	0·615	0·624	0·855	0·015
1877-78	691,937	69,120	532,817	431,517	2,884 0 0	0·99	1·04	1·28	0·1143
1878-79	600,497	45,460	555,037	431,517	2,993 0 0	0·956	1·035	1·33	0·0757
1879-80	522,892	64,640	458,452	448,882	3,172 0 0	1·165	1·329	1·332	0·12362
1880-81	562,272	8,994	553,278	522,499	3,129 0 0	1·069	1·086	1·150	0·01600
1881-82	596,904	46,373	550,531	540,605	4,671 0 0	1·502	1·629	1·657	0·07769
1882-83	659,489	39,249	620,240	595,754	5,067 0 0	1·475	1·621	1·633	0·05951
1883-84	668,333	48,411	619,922	612,603	6,443 0 0	1·851	1·995	2·019	0·07244
1884-85	669,425	14,680	654,745	654,745	5,059 0 0	1·451	1·483	1·483	0·02193
Total ...	7,166,298	591,802	6,574,496	6,026,324	40,843 12 3	1·097	1·193	1·305	0·08258
			And District Forests ...		122 0 0				
					40,965 12 3				

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

APPENDIX B.

Fire-Protection in Kheri (Trans-Sarda), Oudh.

Number of Compartment.	Area of Compartment, in acres.	Years.																			
		1873.		1874.		1875.		1876.		1877.		1878.		1879.		1880.		1881.		1882.		1883.		1884.		1885.	
19	506	0	0	*b*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	2,054	0	0	*b*		0	0	0	0	0	0	0	0	*b*		0	0	0	0	0	0	0	0	0	0	0	0
21	838	0	0	*b*		0	0	0	0	0	0	0	0	*p*	*b*	0	0	0	0	*b*		0	0			*b*	
25	1,114	0	0	*b*		0	0	0	0	0	0	0	0	0	0	5000		0	0	0	0	0	0	0	0	0	0
26	1,165	0	0	*b*		0	0	0	0	0	0	0	0	*b*		0	0	0	0	0	0	0	0	0	0	0	0
27	973	0	0	*b*		0	0	0	0	0	0	0	0	*b*		0	0	0	0	*b*		0	0	0	0	0	0
30	269	0	0	*b*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	237	0	0	*b*		0	0	0	0	0	0	0	*b*		*b*	0	0	0	0	0	0	0	0	0	0	0	0
32	365	0	0	*b*		0	0	0	0	200		0	0	*b*		0	0	0	0	0	0	0	0	0	0	0	0
22	1,926	...		...		...		..		0	0	6400		*b*		0	0	0	0	*b*		0	0			*b*	0
28	320	...		...		...		..		0	0	0	0	*b*		0	0	0	0	*b*		0	0	0	0	0	0
29	1,574	...		...		...		...		...		...		...		0	0	0	0	..		0	0	0	0	0	0
33	1,306	...		...		...		...		...		..		..		0	0	0	0	*b*		0	0	0	0	0	0
37	307	..		..		...		...		...		...		...		0	0	0	0	0	0	0	0	0	0	0	0
38	416	...		...		...		...		...		...		...		0	0	0	0	0	0	0	0	0	0	0	0
39	1,817	...		...		...		...		...		...		...		0	0	0	0	*b*		0	0	0	0	0	0
40	832	...		...		...		...		...		...		...		0	0	0	0	0	0	0	0	0	0	0	0
41	685	...		...		...								...		0	0	0	0	*b*		0	0	0	0	0	0
42	1,190	...		...		...		...				...		...		0	0	0	0	0	0	0	0	0	0	0	0
43	1,395	...		...		...		...		...		...		...		0	0	0	0	0	0	0	0	0	0	0	0
48	3,091	...		...				...		...		...		...				0	0	0	0	0	0	*b*		0	0
49	307	...		...		...		..		...		...		...				0	0	0	0	0	0	*b*		0	0
50	2,195	...		...		...		...										0	0	0	0	0	0	*b*		0	0
53	3,076	...		...		...				...		...				...		0	0	0	0	0	0	*b*		0	0
54	1,875	...		...		...						...						0	0	0	0	0	0	*b*		0	0
55	2,080	...		...		...				...		...		...		...		0	0	0	0	0	0	*b*		0	0
57	1,754	...		...		...				...		...		...		...		0	0	*b*		0	0	0	0	0	0
58	678	...		...		...		...		...		...		...		...		0	0	*b*		0	0	0	0	0	0
61	2,372	...		...		...		...		...		...		...		...		0	0	0	0	0	0	*b*		0	0
62	3,360	...		...		...		...		...		...		...		...		0	0	0	0	0	0	*b*		0	0
15	915	...		...		...		...		...		...		...		...		0	0	0	0	0	0	0	0	0	0
16	832	...		...		...		...		...		...		...		...		0	0	*b*		0	0	0	0	0	0
17	1,158	...		...		...		...		...		...		...		...		0	0	*b*		0	0	*b*		0	0

00 = Successfully protected.
b = Wholly burnt.
6406 = 640 acres burnt.
The year 1873 means the year reported as in 1872-73 up to the rains of 1873.

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